Industrial FINISHING

TECHNOLOGY DEPT
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DETROIT

Different Weapons, but the same Cause— FREEDOM

★ The methods and means of waging this war are different from those used in the days of Washington and Lincoln, but the cause for which we are fighting is still the same. This month, as we pay tribute to the two great leaders who successfully defended our freedom, let us also honor and pay tribute to all people, everywhere, who are continuing the crusade for freedom.

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Manufacturers of Wood & Metal Finishing Materials

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with Crusader one coat non-specular enamel . . .

IT is no longer necessary to pile paint on aircraft constructed of stainless steel or anodized aluminum. Why? Because, Crusader non-specular enamels possess superior characteristics of adhesion, durability, flexibility and toughness in a one-coat application.

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Crusader one-coat enamels are speed synthetics comparable to lacquer in drying time but providing greater resistance to aromatic fuels, brake fluids, de-icing and cleaning solutions. They surpass exacting military requirements for texture and non-specular properties. Write for full particulars regarding these improved Crusader enamels—they are engineered specifically for aircraft constructed of stainless steel or anodized aluminum.

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INCORPORATED
ELIZABETH • NEW JERSEY
Box 131

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TECHNOLOGY DEPT.

HAVE YOU ADOPTED MACHINE GUN METHODS

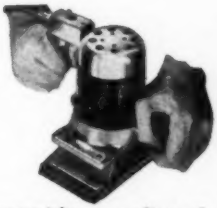
IN YOUR FINISHING DEPT'?

for VICTORY

Don't use Civil War methods

Today's Production Demands the SPEED and PRECISION of the

Easy RECIPROCATING ELECTRIC SANDER



Hundreds of applications . . . new or maintenance. The EASY Sander does the work of two or three hand operators. A better finish too . . . with inexperienced help, men or women . . . on even closest tolerance jobs . . . sanding, rubbing, polishing . . . wood, metal, plastics, composition . . . wet or dry . . . curved or flat surfaces.

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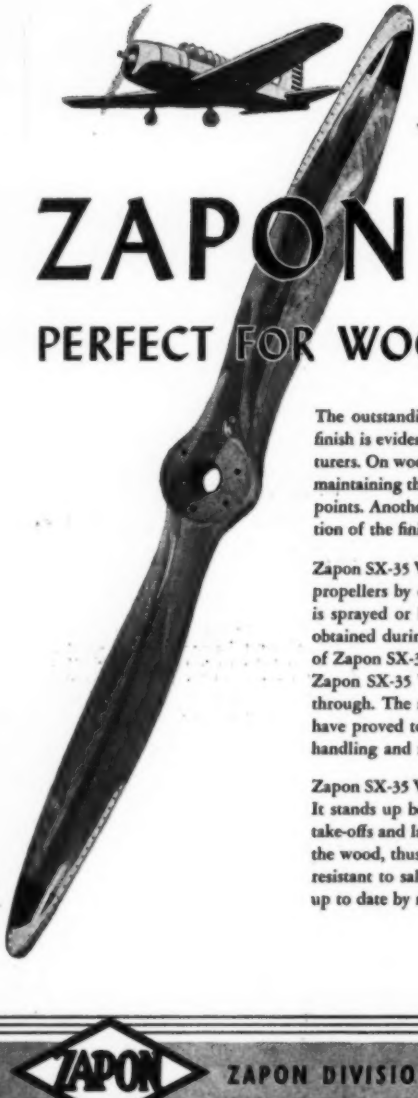
DETROIT SURFACING MACHINE COMPANY

7434 West Davison **Detroit, Michigan**

ZAPON SX-35

PERFECT FOR WOOD PROPELLERS



The outstanding success of Zapon SX-35 wood propeller finish is evidenced by its adoption by a number of manufacturers. On wooden propellers, excluding moisture as well as maintaining the moisture content of the wood are important points. Another highly important factor is speed of application of the finish.

Zapon SX-35 Wooden Propeller Finish is applied to wooden propellers by dipping the first three coats. The fourth coat is sprayed or brushed. Deep impregnation of the wood is obtained during the dip process. Due to the excellent flow of Zapon SX-35, a minimum amount of sanding is required. Zapon SX-35 Wooden Propeller Finish is used all the way through. The savings in time from using this base material have proved to be enormous, due to its fast drying, ease of handling and minimum of rejects.

Zapon SX-35 Wooden Propeller Finish is tough and flexible. It stands up better under the abuse a propeller receives on take-offs and landings. Being flexible enough, it moves with the wood, thus reducing cracking and checking. It is highly resistant to salt water. A very comprehensive booklet, kept up to date by new sheets, will be sent on request.

ZAPON

ZAPON DIVISION · ATLAS POWDER COMPANY

Eastern Sales: Stamford, Conn. *Western Sales:* North Chicago, Ill.

INDUSTRIAL FINISHES

"Wartime Painting Equipment Achievements"..... Page 20

Industrial FINISHING

Reg. U. S. Pat. Office

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Letters from Readers...

OF INDUSTRIAL FINISHING

These letters (and many others) were answered recently by the editorial department, but are published here to reveal certain interesting trends of desire and activity in the industry, and to encourage additional inquiries, comments and suggestions. Further information about any of them can be obtained by writing this office.—Editor.

Transparent Discs Wanted

We are using a quantity of ¼x16-in. glass discs with beveled edge and ½-in. hole through the center. Due to the enormous breakage, we would appreciate your forwarding us any available information relative to the manufacturing of a transparent plastic or Plexiglass.—A. Co. (Lamp Shades).

Wrinkle Enamel Wanted

The Keystone Varnish Co. has referred us to you for sources from whom we could purchase a wrinkle finish paint to be used in war production. We would appreciate the names of any manufacturers, who specialize in this type of finish.—W. L. Co. (Paint Service).

We are writing you a letter and enclosing a list of concerns that are licensed to produce wrinkle coatings. Some of them are near your locality (Southbridge, Mass.)—ED.

Machinery Finishes

Recently a very interesting series of articles was published in your magazine on machinery finishes.

Our representative in Cuba has asked us to give him similar information which, in turn, was requested by the Manager of the "Official Bulletin" of the Cuban Association of Sugar Technologists.

We would like very much to receive a set of the articles publ'shed in your magazine and also your permission to hand them over to the publisher of the "Official Bulletin" of the above mentioned organization. If you would have no obection to our so doing, would you be willing that we ourselves use your article as the basis of an article on machinery finishes to be written by our advertising manager for use in the publication of the Cuban Association of Sugar Technologists?—X. Y., Export Division.

We have no objection to your forwarding these articles to your representative in Cuba. Also, we have no obection to your reprinting any of this material in some of your own literature—just so you include a credit or courtesy line to the effect that same is from INDUSTRIAL FINISHING Magazine, Indianapolis, Ind.—ED.

Wood Flour Wanted

On page seven of November issue of INDUSTRIAL FINISHING, we note that you are able to furnish the names and addresses of manufacturers of wood flour products. We are interested in these products and would appreciate the names of manufacturers.—I. T. (Wooden Toys).

Information supplied.—ED.

Bronze Finish on Doors

We have a customer who wishes to finish outside doors in an imitation bronze. This firm has in mind a finish similar to that applied to the exterior doors in the St. Louis Cathedral, St. Louis, Mo. If you can give us an

DOLAN WAR FINISHES

for WOOD and METAL

Olive Drabs ★ **Rot Inhibiting Primers**
Lustreless Enamels **Battleship Grays**
Shell Lacquers ★ **Airplane Dopes**

If you are figuring on Government contracts with the Army, Navy, Air Corps or any branch of service—we are equipped to furnish the finishes according to Government specifications. Our staff of Laboratory Technicians is familiar with all problems and its services are available for the asking.

Also Still Available

DU-BAR BLEACH ★ **FABRI-CLEAN**
For modern light-tones **The magic Fabric Cleaner**

V. J. DOLAN & COMPANY, INC.

Mfrs. of "Unquestionable Quality" Industrial Finishes

1830 N. LARAMIE AVENUE CHICAGO, ILLINOIS

HERE'S *Proof* of 300%

INCREASE IN DRYING PRODUCTION with BURDETT Original Infra-Red Gas Burners

". . . in our paint shop, Burdett Burners not only increased our production 300% but produced more uniform products which we could not obtain prior to their installation", states one of innumerable users of these (the original) Infra-Red Ray Gas Burners. Burdett Burners are available from 2½" to 12" in diameter—capacities from 10,000 to 150,000 B.t.u.'s per hour per individual Burner.

Write for other facts —increase YOUR production.

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BURDETT MANUFACTURING CO.
Infra Red Gas Burners

SPECIFICATION PROTECTIVE COATINGS

UNITED'S Specification Protective Coatings are doing their part to help keep war production schedules rolling.

There is a specially formulated United product to meet the rigid requirements of any Government specification protective coating. Years of constant research and product development have enabled us to meet the unusual requirements and demands of war work.

Call on United for Government Specification Coatings and let us help you solve your finishing production problems and "Keep 'Em Rolling."

UNITED'S S. P. COATINGS ARE NOW USED ON SHELLS, AMMUNITION BOXES, AMMUNITION, ARMY TRUCKS, SIGNAL CORPS EQUIPMENT, INSTRUMENTS AND PANELS, AIRPLANE PARTS, PORTABLE MACHINE SHOPS, ETC.

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MIX IT
Right in the Suppliers' Drum

- No solvent loss
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- Nothing to clean

- Supplied in sizes from 5 to 110 gallons; any load, any tumbling speed.

Send for Literature!

THE VOL-U-METER CO., 75 Wilbury Place, Buffalo, N. Y.

opinion as to how to arrive at this type of finishing we will appreciate it. —U. Mfg. Co. (Modern Store Equipment).

Please tell us more about these doors. Are they new or old, and what kind of wood or metal are they made of, or covered with? Are they flat and smooth or are they paneled and heavily moulded or covered with some intricate pattern of carving?—ED.

Powdered Lead Wanted

In the November 1942 issue of INDUSTRIAL FINISHING there appeared, on page 37, in the article entitled, "Finishing Wood Pulls, Knobs for Furniture," by H. W. Chester, a method for simulating bronze finish through the use of powdered lead. We are interested in locating a source of supply for the powdered lead, and would appreciate any information you might be able to give us.—H. A. Co.

Mr. Chester has suggested three sources of supply and we are informing you about these by letter.—ED.

Information P. D. Q.

ADVISE WESTERN UNION IMMEDIATELY SUPPLIER OF ELECTRIC BURNING IN KNIVES FOR STICK SHELLAC AND PLEXIGLASS MASKING MATERIAL PAGE 119 JANUARY EDITION.—E. & R. CO.

Information supplied.—ED.

Roller Coater Wanted

Can you put us in touch with manufacturers of a roller coating machine that will run a ¼-in. colored stripe lengthwise on a white enameled broom handle?—H. W. Co. (Novelties).

Perhaps a striping tool would serve your purpose. However, we are sending you names of manufacturers of both types of products.—ED.

Fireproofing Canvas

In the January issue of your magazine, INDUSTRIAL FINISHING, you listed a query on page 111 under the heading of "Fireproofing Canvas." We manufacture and have in stock at all times a solution which we believe is the type required by the inquirer, and would appreciate your advising us of

ECLIPSE SPRAY GUNS

Now Made of PLASTIC!

★ A ¼-lb. lighter than with the aluminum body.

★ Strong, durable, not affected by paints, thinners, etc.

★ On priority, but delivery is good.

★ Send for Catalog 80-P.

ECLIPSE AIR BRUSH COMPANY, Inc.

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for WARTIME coating, use

SEA-LAC

perfected **Zinc Chromate Primer for perfect flow and adhesion.**

perfected **Baking Enamels to suit your baking schedule.**

perfected **Lacquer Enamels for all materials and purposes.**

These are all formulated and tested to meet Army-Navy specifications. Samples on request.

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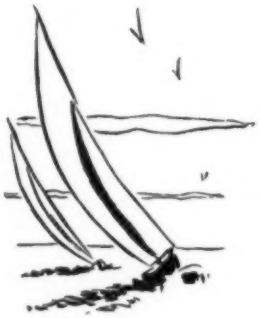
Substitute Finishes

Get acquainted with the full range of SEA-LAC finishes. Hundreds of substitute finishes to choose from. Write today for information.

Duralac Chemical Corp.
84 Lister Ave. Newark, N. J.



his name and address, in order that we might supply him with the information, prices and samples requested.—C. R. Daniels, Inc. (Manufacturers of Everything of Canvas).

Information given.—ED.

Varnish Drying

Could you tell us whom we could get in touch with to find out how to construct a varnish-drying booth? We are doing some government work and have been thinking somewhat of converting from lacquer to varnish. We would like to keep the expense of constructing this booth at a minimum, and thought probably some sort of home-made method might work out satisfactorily. Please let us know whom we could correspond with to get some information about this.—D. W. Co. (Furniture).

For efficient economical drying of varnish coatings you need controlled uniform heat, humidity, circulation and ventilation. In a letter we are suggesting the names and addresses of concerns experienced in engineering such projects.—ED.

Tack Rags Wanted

Will you kindly advise us where we can purchase tack rags? We saw an ad in your INDUSTRIAL FINISHING Magazine, but are unable to locate it again. If you can give us this information, it will be greatly appreciated.—S. N. (Burial Cases).

Information given.—ED.

Fire-Resistant Paint

We are interested in an article entitled "Fire-Resisting Paint," appearing in the December issue of INDUSTRIAL FINISHING, on page 80. Will you kindly give us the address of the Benjamin Foster Co.?—T. P. Co.

It is Philadelphia, Penna.—ED.

Canvas Fireproofing

On page 111 of January issue, J. S. M. Co. asks about canvas fireproofing. DuPont recently devised a new chemical for this purpose. The company states that it does not stiffen or alter the "feel" of fabrics, nor damage dyed colors. Since J. S. M. Co.'s canvas is exposed to rain, DuPont's new waterproofing material may be useful. Another process is used by Hoffman Rubber Co., Inc., of Framingham, Mass.,

(Continued on page 102)

★

Lacquers

Fillers

Stains

Enamels

Paints

Basic Specifications

—tell only part of the story. Between the specification and the finished product there are possibilities of improvement, based on experience and manufacturing skill. These intangible factors have made Stille-Young Paints and Finishes first in Peace and first in War—first in that extra quality that does the job just a little better. Stille-Young is zealously guarding its broad War Paint research and production experience for the day when it can be combined with the experience of yesteryears to establish higher industrial standards than ever before.

★ *Use Stille-Young Finishes and "Finish with Confidence"*

THE STILLE-YOUNG CORPORATION

2300 North Ashland Avenue • CHICAGO, ILLINOIS

Snap shooting LILLY'S part in making Victory Finishes . . .

THE LILLY COMPANY

HIGH POINT, N. C.

Buy War Bonds

80%

Change Over to War Work!

WE HERE at Lilly Varnish Company are playing a part in America's production victory. Eighty per cent of our capacity—in machines, men, brains and craftsmanship—is now devoted to making vital war finishing materials. Facilities of all three of our plants (Indianapolis, High Point and Gardner, Mass.) are available to manufacturers needing finishing materials to help speed VICTORY.

LILLY VARNISH COMPANY
INDIANAPOLIS, IND.

Suppliers of Equipment

ARE ESSENTIAL IN OUR WAR EFFORT

At the Editor's invitation a few manufacturers of equipment used in production-painting departments have submitted interesting data summarizing their efforts for the war. It is amazing how extensive this equipment, and its engineering, enters into our war production picture, how really essential it is for the completion of so many different products, all of which are being turned out in quantities that stagger the imagination. Letters that follow are presented in the order in which they were received:

Letter from Mr. E. F. Watts, Vice-President, Binks Mfg. Co.

SUMMARIZING our own efforts for the War, I would say that we have had the most amazing record in the entire history of our company.

Spray Booths—As you know, figures are very dangerous things and yet there is no way in which we can get across to you the outstanding job done than to tell you that during 1942 we installed over **** water-wash type spray booths, covering every state in the Union, the District of Columbia, Canada, and practically every territory of the United States.

As you may know, many of these spray-booth installations were very large, and were complete with an air supply system, as well as an air exhaust system. In many cases the installation included conveyors, infra-red ovens, steam or gas-fired ovens, humidifying and dehumidifying units, and in one case, complete refrigeration equipment with necessary cooling towers.

Probably the most interesting types of spray booths sold were those placed in the various U. S. Air Force Base Engineering Shops, which are built or being completed in nearly *** different locations throughout the United States. After the pilots in training finish their primary course, they are sent to secondary schools and finally to these Army Air Bases throughout the country. Each Army Air Base has a base engineering shop, in which there is one 24-ft. water-wash spray booth and three 6-ft. water-wash spray booths.

These spray room enclosures are provided with an air supply system in each case, but our company does

not quote on the air supply, but simply on the spray booths themselves.

Most of these base engineering shops, so far, have been located in the Southeast and Southwest parts of the country, Texas alone having nearly ** Army Air Bases.

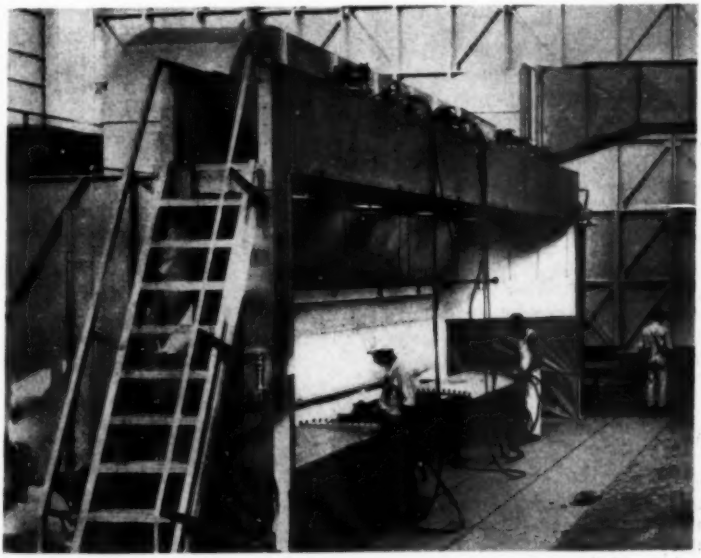
These booths are used for spraying the fuselage, engine parts and for general painting purposes for anything that has to be sprayed around the Army Air Base.

Automatic Installations — A list of the automatic installations installed by our company during 1942 covers over *** installations in ** different states and Canada.

Automatic machines were designed and completed for spraying a variety of items such as hand grenades, fuse cans, incendiary bombs, blitz cans, cartridge cases, fuse caps, booster adapters, light reflectors, ammunition boxes, army helmets, civilian helmets, water cannisters, airplane spark plugs, anti-tank mines, and every conceivable shell from 20-mm. up to 155-mm., and every type and kind of bomb from the 100-lb. practice bomb up to and including the 8,000-lb. "block-buster" bomb, as well as torpedo flasks.

Naturally, such a wide variety of items to be finished automatically has entailed constant research, experimentation, designing, and testing, and perhaps it is in this field that the Binks Mfg. Co. has given its most direct contribution to the war effort.

Circulating Systems — Although paint-circulating installations have



Spray room in aircraft plant. Photograph, courtesy of Binks Mfg. Co.

not been as large as in the peace-time automotive industry, still we have installed over ** large paint-circulating systems in various war plants throughout the country, and in many cases these systems have been used in conjunction with the automatic installations mentioned above.

The paint-circulating system is still the most ideal solution to the paint-handling problem, as it eliminates the cost of trucking and handling of paint to and from the booth, eliminates material and labor costs and cleaning paint containers, eliminates costly rejects, reduces floor space requirements to a minimum, reduces fire hazards, and provides better working conditions.

Standard Equipment — When we come to standard equipment, the figures of spray guns, oil-and-water extractors, engine cleaners, regulators, pressure tanks, exhaust fans, and other standard items sold direct to the Government and to war indutries, is really amazing.

If anyone had ever told us that we would sell ***** spray guns in one year, or ***** cups, or ***** oil-and-water extractors, back in peace-time, I would have thought that they were doing a lot of dreaming and wishful thinking.

However, these are the facts, and with over ***** parts in our standard line, and all the trouble of getting raw materials and making substitutions for critical materials, we think that the job done is just a bit short of miraculous.

Now, Mr. Rohr, as stated above, figures are dangerous things, and I don't know that it would be a wise policy to print them. However, the only way that I can tell you and give you a true picture of the story is to give you the figures, and I will depend on your writing and editorial ability to translate the general impression to your readers without mentioning figures.

Letter from Mr. B. C. Gardner of The DeVilbiss Company

THE FACILITIES of The DeVilbiss Co. have for some time been devoted to the production of its products, as required by industry in the manufacture of the implements of war and to serve the various needs of the Army and Navy. So great has been the demand for the company's service that it has tripled the capacity of one plant and doubled that of another.

Spray painting equipment has been furnished the Army and Navy for use wherever paint and finishing materials are used. Buildings, ships and structures must be painted and kept preserved by repainting. Aircraft, artillery and motor vehicles must be refinished and

Spray-painting 1000-lb. bombs in a Government ordnance plant. Photo., courtesy of The DeVilbiss Co.

camouflaged. Shells, bombs and other munitions require paint for protection while in storage.

Air compressors are used in military service for many different purposes. DeVilbiss air compressors will be found in several branches of the service. One Army order for small, gasoline-engine-driven outfits was employed to equip trucks which are used as mobile field service units. Hundreds of larger air compressing outfits have been supplied to many branches of the Army and Navy.

Exhaust systems for the ventilation of areas where a large volume of spray painting is done have been designed, built and installed in many of the ordnance plants, arsenals and proving grounds throughout the country.

Hose and hose connections have been supplied for a great variety of applications in many of the country's military establishments.

But the use of DeVilbiss products by the Army and Navy is small compared to that by Industry in the manufacture of war material. It is here that this company's engineering, equipment and service have made the greatest contribution to the prosecution of this war.

Machine Tools and War Production

War production started with machine tools. Upon this industry fell the responsibility of getting others into production. DeVilbiss spray painting equipment and exhaust systems have aided the builders of machine tools, through speeding up the painting operation, to break the industry's previous production record.

As soon as tools were ready came the demand for all speed in the production of shells and bombs, pursuit, fighting and bombing planes; naval vessels and cargo ships; tanks, trucks, half-tracs, jeeps, motorcycles and ambulances; helmets, guns, communication systems—all the arms, tools and equipment used in the air, on land and sea by the soldier, sailor and marine—nearly all of which had to be painted with the greatest of speed, and with the quality required for adequate protection.

The manufacturers of these products had been using spray equipment in making peacetime goods. But now they needed more, either of standard design or specially built for products new to their production processes. For the first time in its history DeVilbiss plants went on a 24-hour schedule. Every type of spray painting and exhaust equipment was required in a volume greater than ever before. Now, spray painting equipment is being used for the painting or finishing of nearly everything in military service, from buttons to battleships, at production rates as high as 3,000 parts an hour.

Automatic Coating Machines

The emergency has required the building of many machines that automatically coat products or their parts at high speed. One of these is an automatic shell-coating machine. Shell and bomb painting is an intricate and exacting task. For this operation automatic coating systems are used extensively. They are employed by the leading private shell producers and by the Government's ordnance plants. Automatic and semi-automatic machines are painting shells from 20 to 155-mm., inside and out, at speeds up to 3000 per hour. Hand-operated spray equipment is painting bombs from 100 to 2000-lbs. as fast as they can be handled to and from the spraying station. Other

types of hand-operated and automatic spray-painting equipment are painting helmets, "blitz cans," incendiaries, airplane parts and hundreds of other items at speeds unheard of for similar products in peacetime production.

What is true of the DeVilbiss contribution to this country's war effort also applies to Canada. The company's Canadian plant at Windsor is supplying the same kind of service and equipment to the Canadian armed forces and Canadian manufacturers.

Letter from Henrietta V. Stern, Eclipse Air Brush Co., Inc.

OUR ENTIRE production is war work, either directly or indirectly; and this is largely due to the fact that the conditions existing throughout the world today were reasonably expected. For example, we delivered the first unit for the automatic painting and drying of 75-mm. projectiles in May, 1940. And since that time various types of automatic and semi-automatic units have been developed for finishing shells, bombs, grenades, fuze assemblies, and so forth, including specially-designed air-operated bomb-testing equipment.

Here 155-mm. shells are passing through spray booth via overhead conveyor, where they are spray-painted with yellow lacquer. Photograph, courtesy of Eclipse Air Brush Co.

Camouflage painting received our attention in the early stages of the present conflict, with the result that specially designed units particularly adapted to this class of work have been favorably received; and destinations would read like a world timetable. In addition to portable gasoline-driven units, comprised of light-weight high-efficiency components, we have supplied special units for coloring airdrome runways; these units cover a width of 10-ft. at a speed of six to eight miles an hour.

Unusual Spray Applications

As might be expected during an emergency, many new and unusual applications for the use of spray equipment have been found; and many new materials and chemicals have been developed which lend themselves to spray application. Our past experience, covering a period of more than 30 years, has been invaluable in solving some of these applications. Unfortunately, we are not permitted to divulge many of the highly interesting problems that have been solved.

One company came to us with a problem of a specially insulated plywood product for building cantonments in arctic climates. The ends of the boards had to be sealed. A wax spray did the job. It kept the boards in better condition and sealed them for more complete insulation. In another instance, small

scratches on aircraft parts were coated with lacquer by a touch-up spray. Sealing these scratches arrested corrosion.

Marine painting has been speeded up through the use of faster guns and the development of extension spray guns that have eliminated scaffolding and staging. This saved time and reduced accidents.

Leather requirements have skyrocketed during this emergency; and one of the largest manufacturers in the country has informed us that they would have been unable to meet the production required without the reciprocating type of automatic spray machine that we supplied them long before Pearl Harbor.

Our wartime and peacetime products are essentially the same. The most outstanding difference is the necessity for getting things done—not on time, but before. There has been an excellent spirit of cooperation among our employes, and this is one of the reasons we can point to an enviable record of bettering our promises.

Letter from F. H. Faber, Despatch Oven Co.

ON EVERY finish baking or drying oven inquiry, our engineers have worked with the following aim in mind:

1) Design an oven or dryer in as simple form as possible in order to speed delivery.

2) Incorporate into the design features that guarantee speedy production and uniform results.

3) Provide dependability, to eliminate production breakdowns and to incorporate features that would conserve fuel and power.

A continuous conveyor oven which automatically dips, drains, bakes and cools small parts incorporated in war products. Minimum floor space; high production; minimum handling; application of additional coats with no handling. This oven is gas-fired, incorporating the high-volume recirculating system, with full automatic and safety control. Photo., courtesy of Despatch Oven Co.

4) Construct equipment flexible enough not only to meet operating conditions today but Post-War conditions of the future without sacrificing on delivery speed and without the use of strategic materials.

Many improvements have been made in the construction of Despatch external heaters which have been applied to Despatch industrial ovens and dryers so as to permit greater heat output, better control and long maintenance free life.

A novel production arrangement in our factory has enabled us to turn out ovens in an amazingly short period of time following a production line schedule of specially designed units.

Research work has been conducted on many new items which will be released during the Post-War period to improve finish baking and drying.

Letter from G. N. Steere of Ronci Machine Co.

WE HAVE not developed anything new during 1942, due to the fact that our Speedip Enameler sales have taxed our plant to the limit throughout the entire year. Hundreds of makers of small parts have reduced their finishing costs 60 to 90% by coating them in the Speedip enameler. Makers of war goods, cartridge and machine-gun clips, buckles and hundreds of other small parts, with contracts requiring production of 10,000 to 20,000 per hour, are coating them in these machines. One concern recently informed us that they had finished 7,000,000 gas-mask buckles in our R-100 machine, the average cost including coating, material, labor and baking two coats, being seven cents per thousand.

We were recently told by the superintendent of finishing of one of the largest manufacturers of its kind in the country—owners of four R-200 "Speedips"—that their costs for coating an equal number of parts, coated by former methods and by "Speedips," showed a reduction of 85%.

Letter from H. R. Johnson, Naz-Dar Company

SINCE THE beginning of the war the silk-screen process has come more and more into its own. The war has also presented some very difficult problems in connection with the construction of the silk-screen stencil itself. The variety in war products requires that we be able to silk screen on all types of surfaces and objects. Now it is nothing unusual for a silk-screen stencil to be made entirely from steel, or two sides of it steel, and constructed so that you can print over humps and other obstructions.

The Naz-Dar Co. is also making silk-screen stencils for printing inside of various types of radio chassis and other kinds of war equipment. The type of printing that can be done by the silk-screen process is limited only by your ingenuity.

Varying Air Pressure Problem Solved

I WAS much interested to read G. F. K.'s short item entitled, "Use Pressure Regulators on Air Line" (Dec. 1942 issue, page 84) because his need closely paralleled that of a plant with which I am acquainted. The finishing-room air lines were "starved" when other and heavier air-powered equipment was being operated.

Additional compressor equipment was requested but the shortest possible time for delivery was six months, and no second-hand compressors could be located.

To keep the entire plant operating with present compressor capacity was necessary and, even though there were times when the unloader on the compressor cut in, there was no way in which various departmental operations could be staggered for better distribution of the air demand.

To maintain the finishing-room pressure, each of the supply lines was cut, and into it was tied a receiver or surge tank (working in reverse to the usual hydraulic surge tank). Each tank was merely a 4-ft. section of 10-in. heavy pipe, with orange-peel welded ends. It was set vertically, with the feed-in line entering some 8-in. from the bottom and the outlet to the finishing room at the top, with necessary return bend to resume original piping line.

Although each tank held only a little more than 3-cu. ft. of air, that amount, at line pressure, was ample to maintain the proper (and uniform) pressure in the spray booths. This eliminated the losses formerly occurring because of spotty spraying.

It was found that the introduction of these volume tanks close to each line connection also served as a final trap for any moisture or lubricant carried along in the air stream, these both tending to settle out in the relatively slow flow through the tank. A nipple and ¼-in. bleeder cock set into the base of each unit, provided for pressure drainage of any fluids collecting.

After the volume tanks had been in operation for some weeks the check valves ordered for use with them arrived and were cut in on the compressor side of each unit. With the completed set-up, the tanks held maximum system pressure, and the compressed air in them did not tend to feed back into the mains when the demand became heavy elsewhere, yet the checks would act to admit line pressure to the tank as soon as its contents dropped below the gauge of the system.

Once the volume tanks were installed, the entire demand of the system was no greater than previously, being, as before, the sum of all air draft by all points of use. It was found, however, that the compressor could be driven again at its normal speed, instead of being forced at overspeed to attempt to maintain uniform pressure in the face of intermittent demand.

The volume tanks were made by the plant welder who utilized some short lengths of pipe already on hand, and formed the ends by notching and forming long tapers. The only wastage was at the ends, since one set of interlocking sections, as cut out with the torch, made two ends when formed and welded. Brackets for supporting the units were welded to the body of each tank, leaving the base free for easy draining.—ELTON STERRETT.

Magout Powder for Magnesium Fires

Pulmosan Safety Equipment Corp., 176 Johnson St., Brooklyn, N. Y., announces Magout Powder for use in extinguishing magnesium fires. The powder is especially made from finely pulverized rock which packs solidly but retains its flexibility. It does not absorb moisture easily. Directions explaining how to use the powder are supplied by the company.

Our Wartime Painting

ACHIEVEMENTS in the development, construction, installation, operation and maintenance of equipment for promoting greater speed and efficiency in the surface treatment and painting of war products has been truly remarkable. It is an amazing story of far-reaching significance. What has been and what is being accomplished is definitely helping the United Nations' war effort. Without this tremendous variety and volume of equipment—much of it working automatically or

Government inspectors check the painting of 155-mm. shells as the shells are removed from drying conveyor. Official O. W. I. photograph by Palmer.

Equipment Achievements

semi-automatically—the application of necessary protective and camouflage coatings, plus identification markings, would represent serious bottlenecks in the manufacture of practically every kind of war product.

Few people, even in the industries represented, realize the magnitude of it all. It is far too big to be even summarized in a few paragraphs by one writer. Accordingly, the Editor has invited several manufacturers of equipment to submit a few highlights of the past year's achievements by their individual organizations. Letters from those who replied are presented elsewhere in this issue, under the title, "Equipment Manufacturers Are Essential to Our War Effort." What they have to say is both interesting and informative. It reveals some definitely important color in the over-all pattern of America's industrial wartime achievements.

Several specific items of equipment developed for surface conditioning, painting and paint drying are briefly described in the following pages. Further information about what is listed, or products not mentioned here, can be obtained by writing to INDUSTRIAL FINISHING *Magazine.*

"Easy" Electric Sander

For smoothing surfaces with small sheets of sandpaper or cloth-backed abrasive, using a pad and duplicating hand motion, but doing it much faster and more economically—this is the purpose of the improved "Easy" portable electric sander. The machine makes about 3000 strokes per minute, as compared to probably 150 strokes a minute by hand.

The detachable bottom plate B, with ¼-in. thick rubber sanding pad, can be instantly attached to the machine at A, with a light snap-on action.

The reciprocating motion of the sanding pad has proved to be exceptionally advantageous in the surface conditioning of numerous war products. Such work as wet or dry sanding, rubbing or polishing on flat and curved surfaces, can be performed on various types of materials—for example, metal, wood, fabric, plastic, doped fabric, etc.

Power is furnished with a universal electric motor of special design, in either 115 or 230-volt models. The unit weighs about 7½-lbs.

The improved model has a detachable bottom plate to which is fastened the sanding pad made of felt, rubber or composition material. Sandpaper or abrasive cloth is stretched and clamped securely over the face of the sanding pad.

This new type plate permits instant removal of one type or size pad and installation of another. Detachable bottom plates are available with pads of sponge rubber, felt, or composition in widths from 1 to 3¾-in. and ¼ to 1-in. thick. Therefore, instead of attempting to use one pad for all applications, special pads are used to fit the specific job.

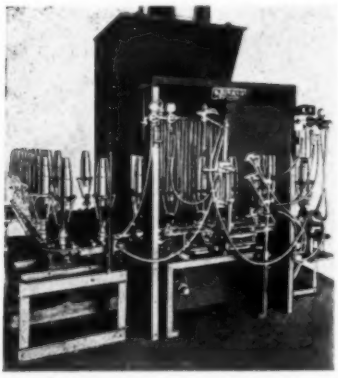
This feature provides for instant change-over from wet to dry work, without waiting for the pad to dry.—The Detroit Surfacing Machine Co.

Automatic Shell Coating

The accompanying illustration shows a typical automatic spray-finishing machine for spraying the inside and outside of 75-mm. to 105-mm. shells automatically, at the rate of 200 to 500 per hour.

Shells are loaded on a moving conveyor in a specially designed work-holder, which holds them in place. As these pass in front of the water-wash spray booth, an oscillating mechanism engages the spindle of the work holder, rotating the shells in front of the automatic spray guns, which spray the exteriors. The shells then pass, still rotating, to the position where a pneumatic spray gun plunges down into the interior cavity of the shell as it rotates, completely spraying the inside. Shells then pass away from the oscillating mechanism, and continue on the conveyor for the required length of time to completely air-dry. They are then unloaded and packed for shipment to the shell loading plants.

The unit is equipped with an ingenious device known as a "skip spray" unit, which is so designed that should a shell be missing on the conveyor, the gun will not spray. Thus no paint is wasted or lost. — Binks Mfg. Co.



Paints outsides and insides of shells automatically—but skips empty holders.

"Our country will continue to be strong and powerful only as long as each of us continues to work without stint and with the knowledge that what we must do, we can do for our country. We cannot tolerate slow-down and sabotages in production. The men at the front have a 168-hour week, and slow-down there means death and defeat."—Commander C. S. Isgrig, U. S. N.

Portable Electric Sander

The new Sterling 1000 electric sander is designed and built to meet every requirement for heavy-duty service. It is a portable oscillating sanding machine. Some of its outstanding features include a fully streamlined balanced and counterbalanced vibrationless unit, compact in size with a handle designed to comfortably fit the hand of either men or women operators, with snap-action switch located on handle convenient to operator's thumb.

Powered by a 1/5-h.p. universal motor, cooled by turbine type fan; motor is protected from dust by instantly replaceable filter screen.

Gears and counterpoise mechanism are sealed in dust-proof cartridge-type gear case. Moving parts are supported by oversize ball and needle

New, streamlined and practical.

type bearings, plus one sintered bronze bearing.

A quickly detachable sanding pad, operated by simple latch-type lock, takes 1/3 sheet of standard abrasive paper and is made flexible to permit sanding on curved or flat surfaces. Tumbler-action clamps, operated by key, screwdriver, etc., lock abrasive sheets on sanding pad. New orbital motion sanding action produces maximum cutting and leaves a smoothly sanded surface on wood, composition or metal.

By using a felt or cloth matrix on sanding pad, the Sterling 1000 will also do many lapping and polishing operations.—Sterling Tool Products Co.

Production Airbrush

A new Type CUB airbrush has a number of improved features. It provides a rapid means of applying all synthetic enameis, airplane dope, lacquer, oil paint, varnish, glaze and other materials. Multipleheads are interchangeable for use with any material.

With correct multiplehead, it atomizes perfectly all types and kinds of finishing and painting materials at high speed and under perfect control . . . can be used wtih pressure tank, overhead container, gravity or syphon cup.

Used with pressure feed tank with airline pressure of 80-lbs., it produces a perfect spray pattern up to 16-in. wide, at a distance of approximately

Standard pipe thread air inlet is ¼-in.; fluid inlet is ⅜-in.; net weight, 22-oz.

8-in. from the surface being coated. With syphon or gravity cup, a perfect pattern up to 10-in. wide is obtained at a distance of 8-in. Other features include:

1) Micrometer-calibrated control of spray pattern assures fine adjustment from small round to wide fan spray pattern.

2) Large aircap is easily removable

During the past year the paint manufacturer has had an entirely different role than he enjoyed previously. Every paint company is making finishes that go into the war effort, and it is their duty to interpret the specifications to the best of their ability, giving a suitable finish for the purpose intended. There is nothing to boast about, as it is entirely up to all of us to supply finishes as required by specifications submitted to the paint companies.—The Sherwin-Williams Co.

and interchangeable. New type fan ports insure perfect spray pattern.

3) Short fluid passage with slanting fluid inlet speeds material flow and increases coating speed.

4) Self-centering stainless steel needle is short, sturdy and wear resistant.

5) Easy-grip handle is molded to fit the hand; will not chafe or cause "hand-grip" fatigue.

6) Larger trigger with light quick-responsive action prevents finger fatigue.

7) Fluid assembly and multiplehead are machined from solid brass stock.—Paasche Airbrush Co.

Metal Parts Cleaner

The Sturdy-Bilt "Soaker-Hydro" metal parts cleaner is simple in design and operation. Besides using present standard methods of powerful hydro-washes now in general use, it has the added feature of an active, agitated soak at 180° F. for as long as five minutes.

Parts to be cleaned are loaded onto large trays (on which they make the entire journey through the cleaner). They are automatically subjected to the active agitated soak where the hot solution loosens and removes any loose dirt and chips into the soaking tank.

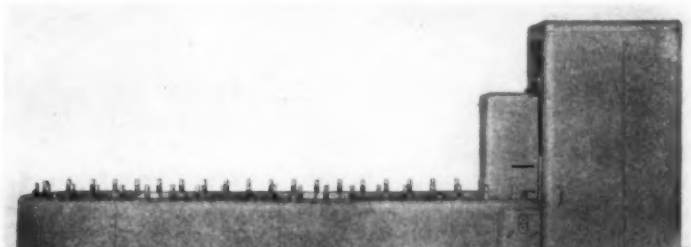
As the material leaves the soaking tank it receives a pump-pressure rinse of the same hot solution, to further remove oils, grease, dirt or chips loosened by the chemical action during the soak. On entering the washing compartment (upper tank), powerful pump-pressure washes and rinses of clean hot water (or light solution) remove any remaining oil, grease, chips or dirt. Parts are dry and clean when they reach the unloading platform.

This compact fully-automatic metal parts cleaner is designed to keep pace with ever increasing production demands. The water in both tanks can be heated by steam, hot-water heater or electricity.

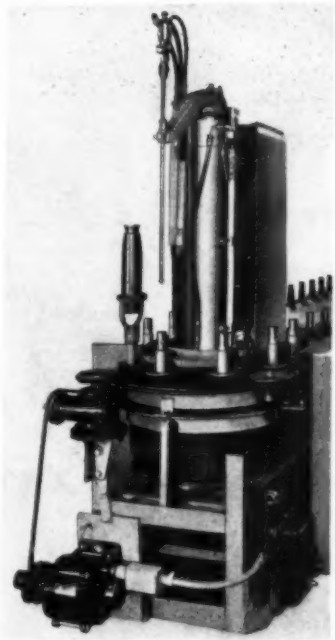
One operator easily loads and unloads the material. The material basket can be delivered to and from the operator by a roller-conveyor.—Sturdy-Bilt Equipment Corp.

Automatic Shell-Coating

A new line of high-speed automatic shell-coating equipment has been designed for wide adaptability in finishing operations. This equipment automatically paints bombs and shell, shot, grenade and cartridge cases of all kinds, in sizes ranging from 20 to 155-mm. Some types spray exteriors only, while others paint both inside and out, depending upon the requirements of the job. The outfits handle, with equal facility, all of the



Automatically sprays insides and outsides of various size shells.



A peek inside the housing. Only two guns—one for spraying the inside, the other for spraying the outside—are required. Both are automatically moved and actuated as each shell passes within range.

finishing and coating materials commonly specified for ammunition.

Every unit, though basically similar, is engineered specifically to do a particular job. Spraying stations are located at one or both ends of the conveyor, depending upon the desired or specified production rate. On one type, three stationary automatic spray guns are actuated only when each shell moves within spraying range.

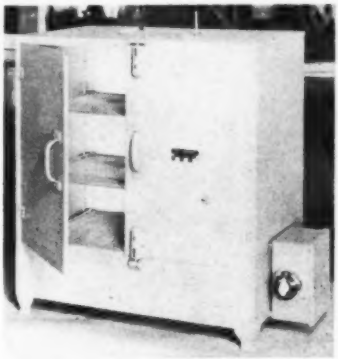
Another outfit employs two guns, one for inside and one for outside spraying. Both are automatically moved horizontally and vertically with the shell. A third hook-up for shells, having an inside adapter, has a spray gun with a hook-type extension. This and another moving extension gun coats all interior surfaces, while a third moving gun paints the outside.

Conveyor length is determined by the drying and handling requirements of each job. Either dry or water-wash exhaust is furnished, as desired.

In the development of this new line of equipment, the manufacturer has given every consideration to the need for high speed with uniform finish, and the conservation of as much valuable production floor space as possible.—The DeVilbiss Co.

Small Electric Ovens

Small ovens are especially desirable for the drying and baking finishes on precision instruments, or for the drying and hardening of radium-painted numerals on instrument dials. Fin-



Uses 110-volt or 220-volt current.

ishes can be properly fixed on any parts that are within the capacity of the oven.

These units serve as drying and baking ovens to dry glyptol dipped coils of various descriptions. Also, they can be used as heat control cabinets in which to store parts and subassemblies to prevent rust and cor-

When that "pinch" comes on an application job that defies all effort to get the selected material to go on as it should, don't neglect the equipment angle. Recently a very heavy topcoat material defied all efforts to get a smooth application, until someone had the idea of trying a new and hitherto untried air-cap for the spray gun. The heavy material broke up like a wash-coat of shellac with the same air pressure, and we halved the application time. When all else has been tried, dig out the spray equipment manufacturer's book and try that one more recommendation suggested for your equipment.—W. T. Smith.

rosion. They can be used for heating parts after plating to remove hydrogen.

Three standard stock sizes are included, the smallest being 14x14x18-in.; the second, 14x14x24-in., and the third 18x24x30-in. Electric heating elements are located in the bottom portion of the oven and through the use of an open-coil graduated heater system, uniform distribution is obtained. Air flow is established by vent openings in the bottom of the oven and vent openings in the top, the upper ones being provided with adjustable slide dampers.

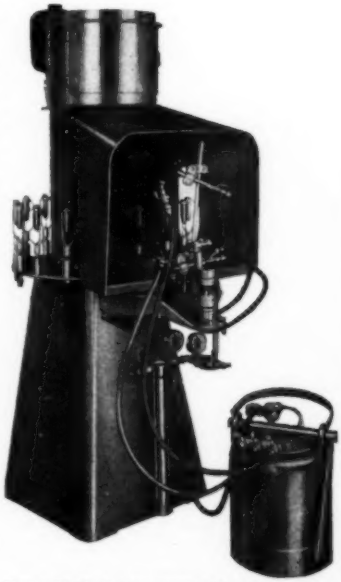
The oven has good uniformity and good ventilation; it is clean and convenient. The units are provided with automatic temperature control that will operate within close limits at any temperature in the operating range.—Despatch Oven Co.

Automatic Airpainting Unit

The following features are included in a new bulletin sheet which illustrates and describes a streamlined automatic airpainting unit:

"Paasche turntable units are compact in design, sturdily constructed, and occupy very little floor space. They are completely automatic, the only manual operation required being loading and unloading. The automatic airbrushes apply a perfectly atomized spray, providing a uniform high quality finish. They are simple in design, easy to adjust and all working parts are fully enclosed. To provide clean, dry air for the guns, a water, oil and dirt separator unit is supplied.

"Explosion-proof electric motor drive



Type F990, 24-in. turntable type automatic airpainting unit for shells, etc.

and speed reducer are fully enclosed in housing, but are readily accessible through access door. The pressure-feed material tank has the 'Clamp-tight Cover,' which can be removed and replaced in 15 seconds—a feature that saves considerable time in material handling.

"After work is loaded, it travels to coating station. Airbrushes go on, and

pieces are rotated while being sprayed. The airbrushes are oscillated, following the shell during this operation. Airbrushes shut off automatically and return to starting position."

This equipment is especially effective for coating 20-mm., 37-mm. and 40-mm. shells, clover-leaf end plates for 75-mm. shells, fuse caps, "AN" connectors, ogives, metal containers, grenades, booster casings and other parts. —Paasche Airbrush Co.

Face Mask for Dust

A transparent face mask that covers eyes, nose and mouth serves a triple purpose in giving full face, eye and respiratory protection against all dusts.

Pulmosan Face Mask No. 1503 is a lightweight, one-piece unit made of pure rubber, with a large acetate non-inflammable window for unobstructed vision. Snug sealtight fit is assured because the soft rubber conforms to all facial contours. Adjustable elastic headbands hold the mask firmly and comfortably in place.

The 4-in. felt filter provides low-breathing resistance, with security against inhaling even the finest particles.—Pulmosan Safety Equipment Corp.

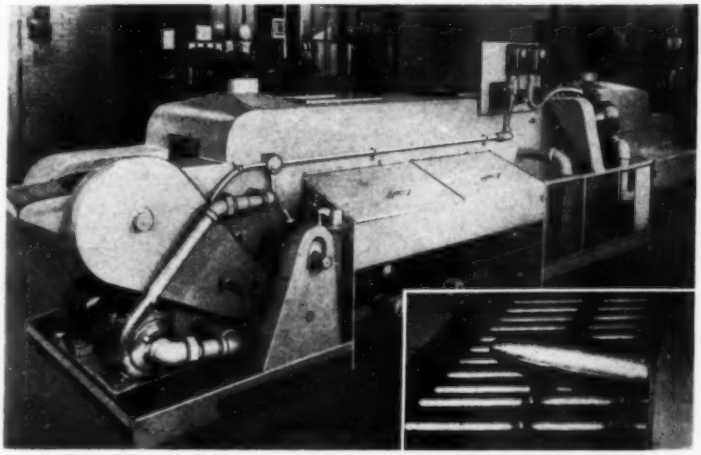
Cleans and Rustproofs Shells

A machine arranged to wash, rinse and rustproof projectiles before painting has been developed for war industries. Projectiles of the 105 and 155-mm. size pass through the machine lying on one side, so that the cleaning compound, rinse water and rustproofing solution can be sprayed up into the shells as well as spraying the complete outside of the shell.

The work picks up enough heat in passing through the machine to dry by its own heat.

The manufacturer declares that by having the machine arranged for washing, and rinsing, plus a third station for spraying the work with a rustproofing compound, you obtain a very fine base for paint.

This same manufacturer has also developed and built continuous Bonderiting equipment for handling steel cartridge cases before painting or lac-



This machine washes, rinses, dries and rustproofs shells preparatory to painting. The insert picture shows a horizontal conveyor (with washers welded to the cross bars) which carries 75 and 90-mm. projectiles through in a slanted position.

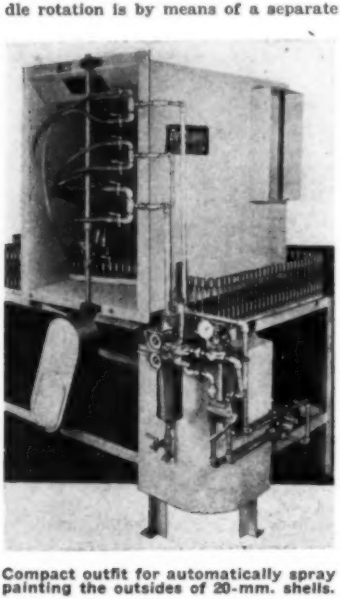
quering, as well as monorail-conveyor-type washing, rinsing and blow-off machines for handling bombs and block busters before painting.—N. Ransohoff, Inc.

Automatic for 20-mm. Shells

One of the more recent developments in shell-painting equipment is a standardized automatic machine for small shells and shell parts. The one illustrated coats the outsides of 20-mm. shells at a rate of 2000 per hour.

This machine is built around a "chain-on-edge," variable-speed conveyor which is of sufficient length to allow for a 10-minute drying time at a production rate of 1000 shells per hour or a 5-minute drying time at a production rate of 2000 shells per hour.

Spindles for supporting the shells are of the removable type and are equipped with flat surface pulleys for rotation inside the spray booth. Spindle rotation is by means of a separate variable-speed drive. Workholders for the shells are mounted on spindles.



Compact outfit for automatically spray painting the outsides of 20-mm. shells.

Spray guns are the automatic air-piston type with adjustable cam-operated spray control. The 10-gallon pressure-feed paint tank is equipped with an air-motor driven agitator. Spray booth, exhaust fan, air transformer and the necessary air and fluid hose, control valves, fittings and connections complete the machine.—The DeVilbiss Co.

Small Forced Draft Ovens

A new series of ovens available in 48 standard models, with temperature ranges up to 1250° F. The ovens are primarily designed for analytical laboratory work. They are also ideal for test baking and drying of paints, lacquers and varnishes, the drying of various solvents from compounds for aging, curing, for sterilizing instruments and glassware, and a multiplicity of other uses involving even small production heating and drying and baking work.

Diagram shows direction of air flow.

The accompanying diagram of the horizontal flow system shows the design features which provide such excellent oven performance. Air is forced through the heated open-coil elements by a large fan. Heated air is forced down the side wall duct to pass through the properly spaced ports and into the work chamber. Special baffles

diffuse the heated air as it enters the work chamber to eliminate localized blast areas. The heated air moves smoothly in a horizontal flow through the oven. These ovens may be especially arranged with vertical air travel when necessary.

In the oven, suction of the fan pulls the heated air from the working chamber and then through recirculating ducts to the heating chamber, to be reheated and recirculated. A special exhaust stack with adjustable damper is provided to remove fumes and moisture-laden air. This enables conservation of the portion of the heated air that can be used for recirculation and accomplishes a definite saving of time and fuel.

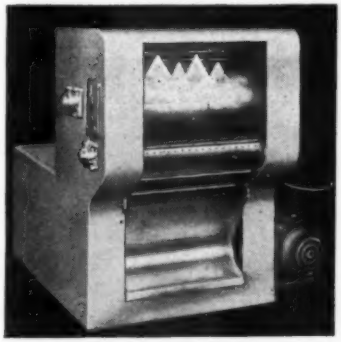
Gas heated ovens use a similar system for distributing and recirculating air. The products of combustion are mixed with fresh air and recirculated and forced into the heat duct and through the work chamber of the oven. This system permits the finest type of direct-fired gas heating for chemical laboratory ovens.—Despatch Oven Co.

Metal Washing Machine

A new small parts washer, designed around a special patented endless tumbling belt is a recent development. This batch type machine receives and discharges the parts to be cleaned through a large front opening. It is similar in its action to the rotary drum type cleaning machine in that the work is tumbled to expose all surfaces to the powerful cleaning action of the sprays.

The patented open-type barrel gives complete access to the parts while in process, and the spray system is also readily accessible for cleaning and inspecting the pipes and nozzles.

The machine is especially well suited for cleaning small screw machine products which can withstand a slight tumbling action. Where the parts are handled in batch form, parts can be washed only, or the wash can be followed with a fresh water rinse, with the rinse water draining to a sewer to prevent contamination of the washing solution.



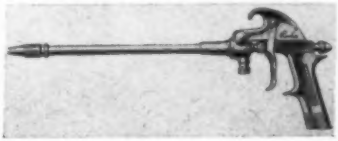
For cleaning small metal parts.

Another layout provides a power wash and a power rinse followed with a compressed air blow-off to remove excess liquid. A special arrangement keeps the two solutions separate and permits washing and rinsing in one compartment without transfer of the parts. To unload the machine, the mill is run in reverse which will discharge all parts over a chute.

This new American Tumbl-Spray unit is available for heating with steam, gas or electricity and can be supplied with full automatic controls. —American Foundry Equipment Co.

Sprays Cleaning Fluid

This R3-EC cleaning gun has proved popular for spraying various kerosene-type cleaning fluids made by the major oil companies under trade names such as "Varsol," "Stanosol," etc. It can



Long "barrel" enables nozzle to reach places that otherwise would be almost inaccessible for cleaning.

be used to spray any kerosene-type cleaning fluid.

The gun is equipped with pistol grip, adjustable material control, adjustable nozzle, and ¼-in. standard pipe thread air connection. It uses approximately 4-cu.ft. of air per minute at 40 to 50-lbs. pressure. Can be used with quart syphon cup or with suction hose running into an open container. Net weight 1¼-lbs.; shipping weight 3-lbs.—Binks Mfg. Co.

Improved Striping Tool

The "Victor" model, the newest of five models of improved striping tools was primarily developed for the circular striping of disc wheels, but has found its way into the striping of wartime equipment for the purpose of identification of parts of airplanes, tanks and ships.

With the variety of sizes of stripes available, single, double or triple, and the many colors of striping material, literally hundreds of different identification markings can be produced.

Makes single, double or triple stripes.

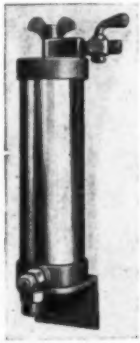
With quick adjustment the striper will produce a lateral or circular stripe on bar stock, tubing or cable, which will identify the part or the alloy. It can also be used to mark and identify parts and castings for various models of machines.

The construction of the wheel head is such that it will allow the use of durable materials such as synthetic enamel or striping lacquer and operate perfectly on any normal surface of metal, rubber, fabric or painted surface.

All models of these stripers are of the rotary type. Wearing parts are made of hardened steel to give long life under conditions of severe service. —Beugler Mfg. Co.

Hose Cleaner

Inasmuch as it is so important now to prolong the life of material hose, as well as to keep it always in condition for delivering clean material to the spray gun, it is timely to consider the hose cleaner.



Cleans hose.

Here is Type F1003 hose cleaner. According to the directions you simply fill the cylinder with solvent, connect hose to be cleaned to outlet at bottom and connect airline to inlet on top. Solvent is forced through the hose under pressure; its flow is controlled by an adjustable needle valve. When the solvent has passed through the hose, a strong blast of air follows, thoroughly cleaning and drying the hose of all solvent and paint particles. The unit saves time and facilitates those cleaning jobs which color changes necessitate.

A mounting bracket is provided so the unit can be attached to the spray booth or other convenient location.

where it will be handy at all times. The air inlet is ¼-in. The solvent outlet is ⅜-in.; all standard pipe threads. —Paasche Airbrush Co.

Cleaning Small Parts

It is now possible to clean different types of parts individually and yet run them through the L & R industrial cleaning machine at the same time. A new triple basket has been devised which fits snugly into the regular work basket (3⅝ x 5½-in.) of the machine. Being made of fine mesh, the triple basket will hold the most minute parts without the danger of their slipping through the mesh and becoming mixed with other elements.

Cleans small parts perfectly.

It has been proved that because of the centrifugal action of the basket in the cleaning compounds there is never any danger, once the contamination has been removed, of the foreign matter returning into the basket and affecting other parts. This provides a foolproof method of handling parts that are too delicate for manual cleaning which certainly cannot guarantee the maximum in safety and cleaning results.

For this type of cleaning many plants are now employing girls because of their natural aptitude in the care of delicate apparatus and parts. The L & R industrial cleaning machine is extremely simple in its method of operation and female operators take to it quickly, and, in record time, become expert in its operation, thereby producing substantial quantities of clean parts without danger either to the elements or to the girls.

The cleaning compounds used in the machine in no way affect metal, and polish parts to a brilliant luster. After the complete cleaning cycle, parts are taken from the work basket thoroughly dry and ready for assembly. L & R solutions are safe, having a flashpoint of approximately 115° F., and are nontoxic.—L & R Mfg. Co.

Infra-Red Drying Tunnel

A new "heavy duty" infra-red tunnel for exceptionally large installations has several interesting features. In this new tunnel the lamps have

Easy to change lamps outside tunnel.

been brought closer together and are staggered in such a way as to give an extremely even heat distribution pattern. New dual pipe stands are installed at each end of the tunnel section to provide maximum stability.

An outstanding innovation is the way the lamps can now be cleaned while the tunnel is in operation. This is done by unscrewing one bulb at a time from the rear, wiping off the dust, and screwing the lamp back in place or replacing it with a cool spare bulb. This feature greatly simplifies maintenance. The illustration shows how the tunnel is easily relamped from the back without stopping production. This is of real importance on large installations in war plants heavily engaged in war orders, where the production schedule might be upset if everything had to be stopped while a worker crawled inside the tunnel to clean it.

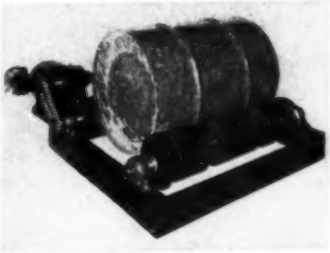
Due to heavier construction, these heavy duty tunnels are now made in sections having as many as 16 lamps per row, a total of 112 lamps per section. These units are also carried in stock for immediate delivery, thus increasing the stock of tunnels this company has available for prompt shipment.

The manufacturer claims that the reflector lamps used with this new tunnel eliminate two thirds of the radiation loss due to dirt, as compared to metal reflectors. The reason for this is that this type of lamp has a metallic reflector applied to the inner surface of the bulb which is hermetically sealed in where it is free from oxidation or the collection of dust, dirt and fumes which might cause its deterioration.—Wilson Mfg. Corp.

"The armed forces of our country have but a single objective, namely, the destruction of the Axis. You likewise have this objective. Every American, whether he or she be a part of the Armed Forces or engaged in war production, is serving as part of one gigantic, fully co-ordinated establishment, and each phase of this establishment is dependent upon the other."—General Ray L. Avery.

Drum Roller for Mixing

Here is a motor-driven drum roller designed to rotate a drum of material as it is received from the supplier—either a filled or partially filled drum—to thoroughly agitate and mix the contents quickly and easily. By rotating the material in a closed drum the manufacturer points out the following desirable features:



For rotating drum to agitate contents.

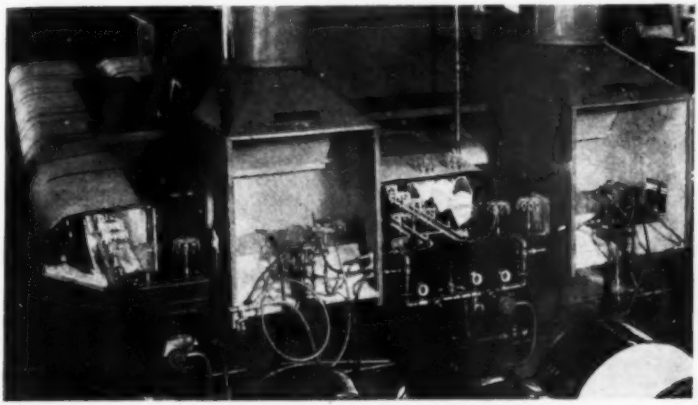
1) No solvent loss.
2) No fire hazard.
3) Nothing to clean.
4) Entire contents are thoroughly mixed to uniform consistency, color (if any) and pigment content (if any). The material is then ready for use.

Drum rollers are supplied in sizes to handle containers of 5 to 110 gallons capacity, and for any load or speed.—The Vol-U-Meter Co.

Automatic Painting-Drying Unit

The accompanying illustration shows an automatic 2-coat painting and infra-red drying set-up for coating small metal parts. Three girls load the machine and one unloads the painted articles.

The parts are loaded manually and are held on special umbrella-type fix-



Front view of unit. Parts receive first coat in booth at the right; then, after an infra-red drying, they are conveyed to booth at left, for second coat.

tures, each fixture holding ten pieces. After the first coat of lacquer is applied by automatic airbrushes in the exhaust booth, pieces are conveyed through an infra-red drying section for 4½ minutes. Work continues on conveyor to second coating station where it receives the final application. It is again conveyed through an infra-red drying section, this time for 8½ minutes, after which the work is unloaded. During the spraying operation, the work is revolved to insure a perfect, uniform coating.

The unit has 308 revolving spindle assemblies set at 7½-in. centers. There is 188-ft. of conveyor chain. Two automatic airbrushes with off-and-on control are provided for each spraying operation. A water-wash exhaust chamber thoroughly cleans exhausting air from both booths, removing paint particles that ordinarily are exhausted outside. To save floor space, this exhaust chamber is directly above the conveyor.

Material is piped to the airbrushes from two 70-gallon "Clamptight Cover" pressure-feed material tanks which are set in concrete pits. A block and tackle arrangement is used for lifting the covers of these tanks when refilling.—Paasche Airbrush Co.

Flow Gun

Type SFG is designed to help aircraft and other war industries speed up operations. It is designed for caulking, cementing and other flowing operations where plastic materials such as crack fillers, sealing compounds and heavy paints are used; is particularly useful in doping and cementing fabric parts of aircraft, and for a wide variety of similar production jobs.

The chief merits of this gun are little restriction to flow of material and great ease of handling. Small, lightweight, well-balanced, it fits the hand comfortably and is easily operated.

Material is fed to the gun under pressure and is extruded into cracks, grooves, and over seams that are to

Nozzles for all materials are available.

be sealed. The volume of flow can be controlled either by regulation of the pressure or by a simple knurled nut adjustment of the fluid needle.—The DeVilbiss Co.

Paint Can Vibrator

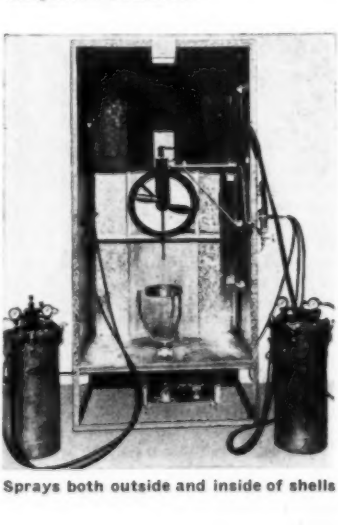
When pigmented paint and enamel stand in the container for a time, some of the heavier solids settle to the bottom. It is a familiar sight to see many users of paint and enamel stirring the contents of a newly opened can of material with a paddle to restore the material to its original condition before using it. Also, the contents of partly used cans must be stirred again if the container stands for several hours, days or months before the remainder is used. This hand stirring takes time; it is liable to promote the entrance of dirt, dust or lint into the fresh clean paint; and hand stirring is often not thorough enough to accomplish a perfect remixing or rejuvenation of the paint or enamel. Sometimes the settled pigment in the bottom of the can is packed so hard that it must be cut with a knife. It would take a lot of hand stirring to rejuvenate material in this condition.

Reconditions paint in closed container.

The conditions just mentioned have prompted the development of a power-driven device for violently shaking or vibrating the can of paint before it is opened. This avoids introducing more air into the contents and it prevents the entrance of any dirt, dust, lint or other foreign substance. Miracle Blue Boy rejuvenators (on the market for ten years) are made in different sizes so that units are available in capacities from a ¼-pint can to a 50-gallon drum. Vibration of a can of material in one of these machines restores the original consistency of the paint or enamel in from three to ten minutes, depending upon the condition of the material (how long it has been in the can). The machine is mounted on a substantial base and has an enclosed electric motor which supplies power for vibrating the filled container.—Miracle Paint Rejuvenator Co.

Shell Sprayer

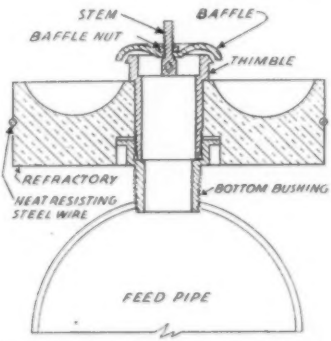
Here is a special unit for spray coating 8-in. shells in a vertical position. The inside coating is done with a semi-automatic spray gun fitted with a long extension nozzle. The outside is sprayed manually by the same operator who handles the inside coating operation. The shell is rotated by an air-motored tripod with a ring at the top to protect the driving band from paint. The rate of production by this method of operation is approximately 25 pieces an hour.—Eclipse Air Brush Co.



Sprays both outside and inside of shells

Infra-Red Gas Burners

The Burdett radiant-heat gas burner is a generator of infra-red rays which can be used for drying and baking paints and other coatings, including



Sectional view of Burdett burner head.

high-grade synthetics and linseed-oil varnishes. The burner consists of an alumnite refractory disc which burns a controlled air-gas mixture fed to it by a mixing valve and a low-pressure blower. There is no separate combustion chamber. Actually, the concave radiant refractory disc is a combustion chamber. On this disc, complete and instantaneous combustion of the fuel generates a combination of convected heat and infra-red ray energy. The Burdett mixer fixes the proportions of the air-gas mixture. Two simple adjustments permit the use of gases of various B.t.u. content.

The Burdett radiant-heat gas burner operates on established scientific principles of heat wave radiation. The refractory disc, at a temperature of 2300° F., sends out infra-red rays which travel through space at the speed of light to the material being heated.

The unique merit of radiation is that no heat is lost between source and destination. Radiant heat is readily absorbed and can be positively controlled to suit any special operation.

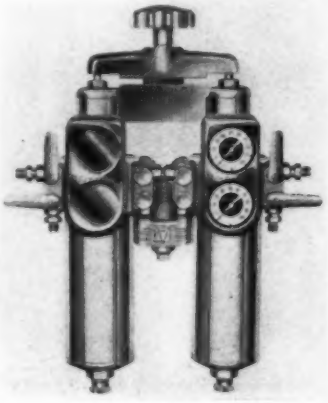
The absence of heat losses means low-cost operation. The mixing valve feeds fuel economically. Perfect instantaneous combustion gives radiation up to 99% deep penetrating infra-red rays. Definite control concentrates radiation, increases penetration, steps up baking speed, and cuts cost on every operation.

Burners are available in sizes ranging from 2½ to 12-in. in diameter, and in capacities from 10,000 to 320,000-B.t.u.'s per hour. Flexibility of application to jobs of every size and type is achieved by assemblies of groups of burner heads on connected manifolds.—Burdett Mfg. Co.

"Twin" Air Transformer

On many automatic spray-painting installations and in other operations where a large volume of regulated clean air is needed, an air transformer of a capacity considerably greater than that of the standard type is required. To meet these conditions a new heavy-duty air transformer, the double-barrelled Type HLC, with a capacity in excess of 100-c.f.m., has been developed.

Though both function independently,



New twin cylinder air transformer.

the two pressure regulators in this transformer are simultaneously controlled by a single knob, making the adjustment quick, easy and positive. The filtering and condensing mechanisms are the permanent all-metal type which never require replacement of any of their parts. The fast-acting regulator diaphragms are made of reinforced oil-proof synthetic rubber and are chatterproof.

Connection to the main air line is made at a single inlet port. No more fittings or piping are required than with single tube models.

Each of the twin cylinders may be equipped with Type HOD Automatic Water Drains in the same manner as the single-tube Type HLC.—The DeVilbiss Co.

Coats Incendiary Bombs

A line of semi-automatic units for coating the interior of incendiary bombs, 20-mm., 37-mm. and 40-mm. shells of various types, is helping the war effort.

The unit is compact and occupies a minimum of floor space.

The unit is designed to coat two tubular pieces at one time. Average production for one operator is 18 pieces per minute. The machine operates in the following manner:

Pieces are placed in holding fixtures which are designed so that they guide the shells to the correct position for spraying. The shells rest securely on shoulders, the bottom of the fixtures being open to preclude any possibility of paint collecting within.

Starter button is pressed, actuating the air cylinder which, in turn, lowers the airbrushes until the heads enter the required distance into the pieces to be coated. Spraying starts automatically with upward return stroke of cylinder. Spraying stops when airbrushes return to starting position, leaving the shell interiors completely and perfectly coated. Shells are removed from holding fixtures by the operator and the unit is ready for another spraying cycle.

From the time the operator presses the starter button until the interior has been coated and airbrushes return to starting, the operation of the machine is entirely automatic. This assures an absolute uniform application. Adjustments are readily accessible, and are set at factory to meet average operating requirements.

The two type F995 UBRB-2 automatic airbrushes are equipped with special extensions and external atomizing multipleheads which produce a "bushy" type spray pattern, assuring complete and perfect coating of the interiors of the shells. The airbrushes are simple in construction, easy to clean and readily adjusted. They are designed to stand up under long continuous use.—Paasche Airbrush Co.

New Model Respirator

The widely used aluminum-model Dustfoe Respirator, manufactured by Mine Safety Appliances Co., is now available in an all-plastic model, approved by the U. S. Bureau of Mines. Known as the Clear-Vue Model Dustfoe, it is an efficient, compact, light-

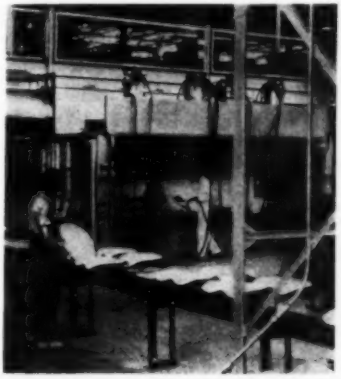
weight respirator made of transparent plastic—durable, odorless, non-corrosive, and a non-conductor of electricity and heat.

The Clear-Vue's transparent construction makes possible inspection of the filter for proper insertion and seal without removal from the respirator. A plastic catch on the filter case locks positively in place only when the filters are in the correct position. The unit is comfortable to wear and gives approved protection against all pneumoconiosis-producing, nuisance, or toxic dusts. The self-adjusting face piece has a new form-molded sponge-rubber face cushion. An Army-type exhalation valve provides immediate drainage of any condensation from the face piece.

The Clear-Vue Dustfoe requires little maintenance. It can be taken apart without tools in a few seconds. With the exception of the single filters which permit a fresh new filter with each cleaning, all parts of the Clear-Vue are interchangeable, and can be washed and sterilized.

Headband hardware of the unit is also of plastic. The unit is comfortable to wear and permits unobstructed downward and sidewise vision. Goggles or head coverings can be worn without interference.

A new bulletin gives full details on the Clear-Vue Dustfoe Respirator. Copies are available by writing this publication or direct to Mine Safety Appliances Co., Braddock, Thomas and Meade St., Pittsburgh, Penna. Request Bulletin CM-6.



Spraying pilot seats in water-wash spray booth. Photo, Binks Mfg. Co.

Plastic Spray Gun Bodies

After many months of development and test, the Eclipse Air Brush Co. presents its spray guns with plastic bodies. The new black plastic gun weighs ¼-lb. less than the spray gun with aluminum body that it replaces. Lighter weight, of course, is an important factor in reducing fatigue. The

Body of gun is black plastic.

plastic has good chemical resistance and is not affected by paint and lacquer thinners, solvents, paint removers, etc.; it is strong, having good impact strength.

The smooth black surface is easy to clean and it makes an attractive appearance with its metal fittings. These guns have been on the job for several months in places where equipment of this type is in constant use under strenuous conditions—shipyards, aircraft factories, munition plants, etc.

Priority assistance is still required in order to purchase these spray guns, but prompt delivery can be assured to qualified purchasers.—Eclipse Air Brush Co.

Cleaning of Aluminum

BY MAXWELL STILES
Lockheed Aircraft Corporation

WHAT YOU must do, do well; but don't add anything that is not essential if it takes up enough time to delay production. If cutting out any present operation will speed production without in any way affecting the safety, performance, economy of operation or durability of the airplane, eliminate it!

With this theme in mind, Lockheed Aircraft Corp. has reduced the processing and finishing requirements on an airplane to a minimum which is commensurate with the standards of quality that are considered essential for corrosion-free operation over a reasonable period of service. Therefore the paint-type finishes applied to aluminum alloy surfaces are composed only of a single coat of zinc chromate primer, while the exterior surfaces are finished with two coats of camouflage lacquer. These conform to Army and Navy specifications.

"In the interest of time-saving and cost reduction," says H. B. Sipple, Lockheed Process Engineer,

Alloy Aircraft Parts

"retouching operations, including the painting of rivet heads, bolts, nuts, etc., on interior surfaces, have been eliminated. It is also planned to eliminate lacquer finishes from the interior surfaces.

"In general, the chromic acid anodic treatment is applied to the strong heat-treatable aluminum alloys, including 14S, 17S, A17S, 24S, 25S, 195 and 220. The more inherently corrosion-resistant aluminum alloys, including alloys 2S, 3S, A51S, 52S, 53S, 61S and all alclad aluminum alloys are treated with the hot chromic-acid dip. This process has been approved for use in connection with Air Forces contracts, whereas the Navy Department requires the general use of the anodic treatment on all aluminum alloy materials.

"Materials are cleaned in preparation for these treatments by means of an inhibited alkaline-type cleaning compound. The cleaning operation is conducted on a mechanized conveyor line in which the work progresses from the cleaning solution through a hot water rinse, and then to either the chromodizing or anodizing baths, as may be required; then, subsequently through a final rinse (which is neutralized by addition of chromic acid) to a drying station where parts are dried in preparation for subsequent painting."

In addition to and amplifying detail requirements for specific cleaning operations, there are a number of general requirements including the following:

Placing parts on racks preparatory to immersion in the chromodizing bath.

1) Where materials showing an acid or alkaline reaction are employed in cleaning processes, parts so cleaned are given a thorough water rinse to remove all cleaning materials. Hot water is preferred.

2) All parts are given the specified protective coating (such as cadmium plate, chromodizing, anodic, primer, etc.) immediately after cleaning and rinsing.

3) All surfaces must be thoroughly clean and dry at the time of application of any organic protective finish. Workmen are instructed that when a surface has been cleaned, it shall not be touched with dirty or greasy hands or objects, before application of the protective finish.

4) Dirt and grease are removed

from parts prior to welding by means prescribed under detail requirements explained later.

5) Prior to heat treating or annealing operations, the surfaces of aluminum and aluminum alloys must be clean and free from such substances as paint, grease and heavy lubricants. However, the presence of inspector's ink stamp or cellophane pencil marks is permissible.

6) The use of steel wool in cleaning aluminum and magnesium alloy parts is prohibited.

7) The use of carbon tetrachloride for cleaning any parts is prohibited.

Going along the cleaning lines with a microscope, we find that detail requirements at Lockheed may be noted as follows:

Cleaning Aluminum Alloys

Preliminary Cleaning—The following methods may be employed for miscellaneous cleaning during fabrication or in the preparation of parts which are to be anodized or chromodized:

Organic solvents such as benzol, and petroleum by-products such as naphtha, may be used. Solvent vapor degreasing may also be employed. Prior to anodizing or chromodizing, parts so cleaned should be given a treatment of proprietary aluminum cleaning compounds which are acceptable to the process engineer.

The working temperature of the solution is 160° to 180° F. unless otherwise specified by the manufacturer. The solution is agitated to improve its cleansing action.

Parts shall be given a thorough hot-water rinse after cleaning. The water in the rinse tank is at all times kept slightly acidic by the addition of chromic acid to neutralize any carry-over from the alkaline cleaning solution. The pH value of the rinse water is kept below 6.8 at all times. If insufficient chromic acid is present, the color of the rinse water will be green. Upon addition of sufficient chromic acid to lower the pH below 6.8, a light tan color will result.

Final Cleaning Prior to Paint Coating—Surfaces fabricated from aluminum alloys for which anodic treatment is not required, and which require paint coatings, are treated by either of the following methods immediately preceding the application of the initial paint coating: 1) a chromodizing treatment or 2) phosphoric acid treatment.

After the fabrication of subassemblies containing previously primed parts, the surfaces are cleaned in such a manner as to be thoroughly degreased without leaving a residue of cleaning material, while at the same time removing a minimum amount of the original primer.

Removal of Welding Flux—Welding flux is removed and neutralized from welded aluminum and aluminum alloy fuel and oil tanks in accordance with the requirements of a detailed Lockheed Specification. Excess flux is removed from other parts by washing with water.

The following method is used for the complete removal of welding flux: Immerse the parts in a 10% (by weight) solution of sulphuric acid, or in an approved proprietary flux-removing compound for a length of time which is sufficient to remove all traces of flux. After removal from the cleaning solution, the parts are washed in hot running water for a sufficient length

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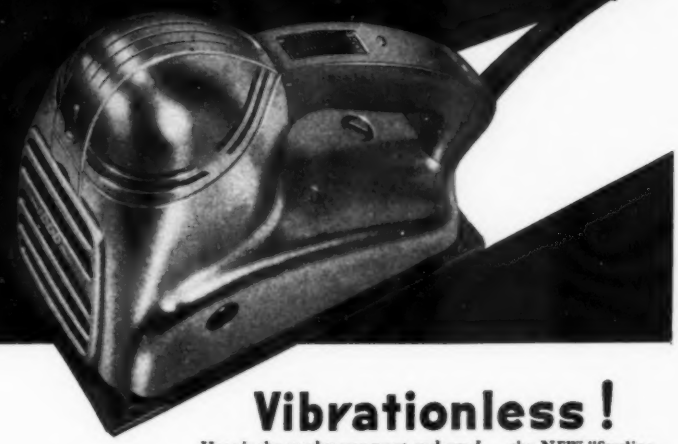

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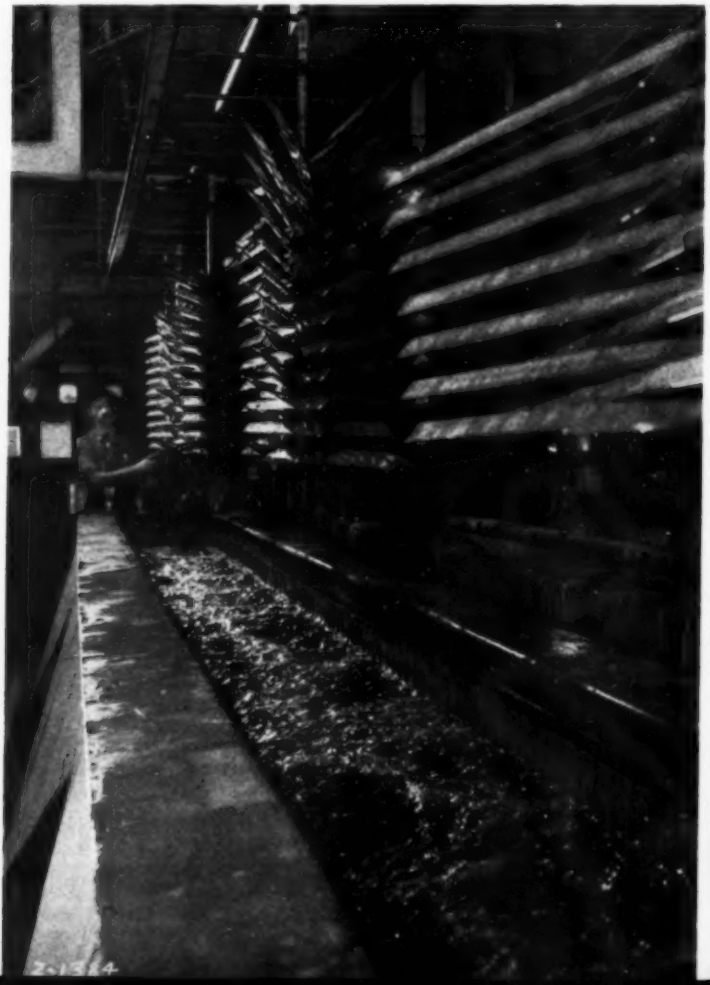
of time to thoroughly remove the acid. Then they are thoroughly dried.

Complete and prompt removal of welding flux is necessary in order to prevent serious corrosive attack. It is undesirable to allow flux to remain on parts overnight. Caution should be used in mixing the sulphuric-acid solution. The acid should be poured slowly into the water and stirred with a wooden paddle. Never pour the water into the acid.

Cleaning Prior to Torchwelding —Removal of the oxide film from



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Many a manufacturer can look back on the day when a Murphy salesman walked in with the solution to a particularly perplexing finishing problem . . . So naturally, when war production brought new problems in its wake, Industry again turned to Murphy. With what success, can best be judged by the greatly expanded volume of Murphy Protective Coatings now going on war material of all sorts.

Note the list at left — particularly the diverse character of the products. It's the best evidence that Murphy is fitted to give you the right protective coating for the war product you are called upon to produce.

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Ditzler Color Division, Detroit, Mich. • The Thresher Varnish Co., Dayton, O.

PITTSBURGH *Industrial* FINISHES

aluminum surfaces in order to facilitate welding operations may be accomplished by dipping parts in a solution of HF (hydrofluoric acid). The concentration is not critical, but 3% to 5% is recommended.

Cleaning Prior to Resistance Welding—Aluminum and aluminum alloy parts must be cleaned free from oxidation by either of the following processes prior to resistance welding:

Wire-brush method: All grease and oil must be removed by methods already described. A motor-driven rotary wire brush, containing .005-in. diameter (or smaller) corrosion-resistant steel or monel wire bristles, is used. The motor must be able to drive the rotary brush at 3000 r.p.m. or faster, but must be insufficient to drive the brush when a pressure great enough to abrade the material is applied by the operator. The results are comparable to buffing.

Hydrofluoric acid etch method: All grease and oil are removed. The etching is accomplished by immersing the parts in a solution of hydrofluoric acid and water or a suitable proprietary compound which has been approved by the process engineer. The concentration of this solution is not critical but will usually be approximately 3% HF by weight. After rinsing, parts are given a hot-water rinse.

When etching anchor nuts with fiber inserts, and bare strong alloys such as 24ST extruded material, after the HF etch and rinse, parts must be dipped in a chromic-phosphoric acid bath to remove deposit, and then rinsed in water. The composition of this bath is approximately 3.5% phosphoric acid (H_3PO_4) by volume and 2% chromic acid (CrO_3) by weight. The temperature of the bath is not critical.

Solutions containing nitric acid are not used for etching.

After final rinse, parts are dried with hot air.

Sub-assemblies, containing faying surfaces are not etched. Sub-assemblies requiring additional spot-welding may be dipped in the chromic-phosphoric bath and/or may be cleaned free from grease by rubbing with a rag and alcohol or other solvent acceptable to the process engineer.

Maintenance Cleaning—In field maintenance and service, it is essential that cleaning materials used for the maintenance of aluminum and aluminum alloy parts shall contain no abrasive nor ingredients that will attack, oxidize or discolor such parts and surfaces. Workmen must exercise care in preventing cleaning solutions from becoming entrapped in seams and under faying surfaces, particularly where dissimilar metals are present.

Inspection and Tests

The thoroughness of cleaning operations may be determined as follows:

On removal from the water rinse, the water film on the metal should be continuous over the entire surface. The breaking of the water film at any point indicates an unclean surface. This test is not applicable to etched or otherwise roughened surfaces.

Safety Precautions

Strong acids and alkali cause severe burns if not counteracted promptly, and are destructive to clothing. A supply of cold running water should be available at

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all times for washing. It is important that large amounts of water be used, for when small amounts of water are added to concentrated sulphuric acid, much heat is generated, which adds to the severity of the burn.

To remove the last traces of acid from the skin after a thorough rinse of cold water, use sodium bicarbonate (baking soda) either dry or mixed with water. To remove traces of alkali left after washing with cold water, use powdered boric acid or a saturated solution of boric acid in water.

Hydrofluoric acid burns are exceedingly severe and painful, hence, the utmost care should be used in handling this acid to prevent any contact with the skin.

AUTHOR'S NOTE: In a subsequent article I will discuss the cleaning of steel, corrosion-resistant steel, inconel, magnesium alloys, brass and bronze.

Wipe-On Corp. Staff Holds Annual Meeting

The Industrial Research Division of the Wipe-On Corp., New York, N. Y., held its annual Service and Sales Meeting at the Chemists' Club, 52 E. 41st St., New York City, on January 7, 1943. The meeting was largely concerned wtih an exchange of experiences of the Wipe-On Service Engineers from the west coast, mid-west and east, on the requirements and needs of aircraft companies and their subcontractors, for the finishing of various types of plywood airplanes and parts. New development of the concern for war use were also discussed by Roy B. Anderson, who presided.

The Wipe-On Corp. started its research on finishes for plywood over seven years ago. As a result it had developed and tested coatings and systems long before such coatings were generally used, and so had proven coatings and systems ready for the plywood and aircraft industry when the war brought to a focus the need for such tried and tested finishes. The firm's aircraft plywood coatings are now called Tuf-On.

Members of Industrial Research Division of Wipe-On Corp. at their annual service and sales meeting, held January 7 at the Chemists' Club in New York.

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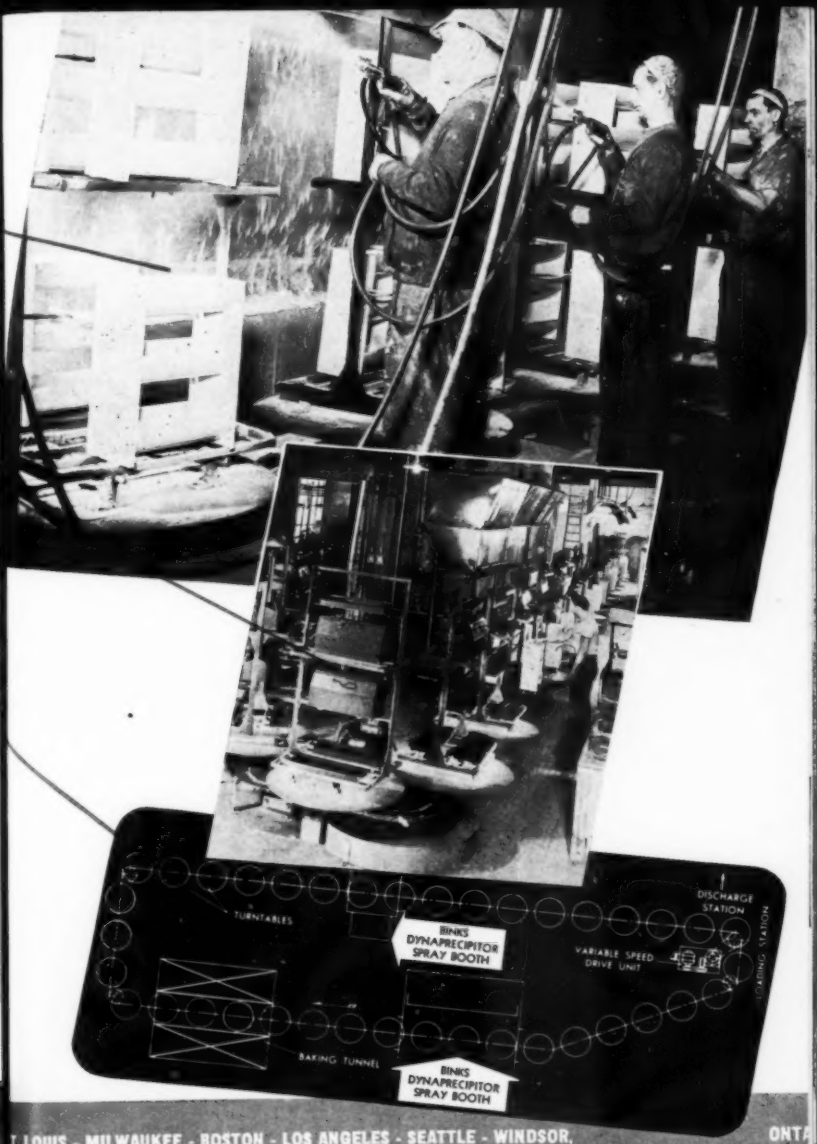

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14 TIPS ON HOW TO SELECT AND MANAGE

Women Factory Workers

BY L. F. MORRISON

THERE'S no longer any question as to whether the finishing department should hire women for production jobs formerly held by men. The war has settled that point. Important things now are how to select the most efficient women available and how to use them to best advantage. Here are 14 helpful tips on the subject from western plants that have already had several months of experience with female help in new types of occupations:

1) Try to find women who live nearby. If a woman tries to keep house as well as working on the outside, she can't afford to spend much time in transit. Mothers of young children are always happier and more efficient if they live close enough to get home early. Thus, the turnover rate is drastically reduced with neighborhood employes. Several plants get help of this type by asking old employes to bring friends or relatives, and by passing the word around among neighborhood merchants.

2) If you can get them, pick young married women. They have these advantages, according to the reports of western operators: They usually have more of a sense of responsibility than do their unmarried sisters. They're less likely to be flirtatious. As a rule, they need the work or they wouldn't be doing it—maybe a sick husband or one who's in the army. They still have the pep and interest to work hard and get along with their fellow employes.

3) Where you have to use older women, try to get those who have worked outside the home at some time. Most plants have found that older women who have lived secluded lives have difficulty adapting themselves to changed conditions and association with other workers; are inclined to be cantankerous and fussy. It's always well to impress on the older woman the importance of friendliness and courtesy.

4) While there are, of course, exceptions to this rule, general experience indicates that "husky" girls—those who are just a little on the heavy side—are likely to be more even-tempered and efficient than their underweight sisters. Of course an overly-heavy woman shouldn't be chosen for a job where she'd have to be on her feet constantly.

5) Retain a physician to give each woman you hire an advance physical examination. This step not only protects the factory against the possibility of lawsuits, but also reveals whether the employe-to-be has any female weak-

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nesses which would make her mentally or physically unfit for the job. Plants that follow this practice report a surprising number of women turned down for nervous disorders.

6) In breaking in women who haven't previously done outside work, stress at the outset the importance of time—the fact that a minute or two lost here and there makes serious inroads on the day's work. Until this point is gotten across, many girls waste too much time in idle conversation.

7) Give the female employe a definite day-long schedule of duties so that she'll keep busy without bothering the foreman for instructions every few minutes. Numerous foremen say that women make excellent workers when they have their jobs cut out for them, but that they lack initiative in finding work for themselves.

8) Wherever possible, let the woman employe change from one job to another at some time during the day. Women are inclined to be nervous and they're happier with change.

9) Give every girl an adequate number of rest periods during the day. Plants that are already using large numbers of women stress the fact that you have to make some allowances for feminine psychology. A girl has more confidence and consequently is more efficient if she can keep her hair tidied, apply fresh lipstick and wash her hands several times a day.

10) Be tactful in issuing instructions or in making criticisms. Women are often sensitive; they can't shrug off harsh words in the way that men do. Never ridicule a woman; it breaks her spirit and cuts her efficiency.

11) Be reasonably considerate about using strong language around women. Even though a girl's husband or father may swear vociferously, she'll grow to dislike a place of work where she hears too much of this.

12) If your girls wear uniforms of any kind, get enough size variety so that each girl can have a proper fit. This point can't be stressed too strongly as a means of keeping women happy and better poised.

13) Remember that most women have certain physical limitations when it comes to heavy work such as lifting. Arrange your work so that the remaining men in the plant will handle those tasks that are too hard for a woman.

14) If this is at all practical, pay women employes by check rather than in cash. A large concern that made a survey on this point found a majority of women preferred this method of payment, and that they kept their finances in better order when checks were used.

Flocks Used Extensively

The Claremont Waste Mfg. Co., Claremont, N. H., manufacturer of cotton, wool and rayon flocks, is busily engaged in making products for both civilian and war purposes. Besides their standard lines of flocks for civilian industry, such as rubber, plastics, paper, textiles and decorative finishing, they have developed through study and research, certain types highly important to the war effort of the nation. For obvious reasons, nothing can be said about these at the present time.

It is no secret, however, that cotton flocks and macerated fabrics are in extensive use by the plastics molding industry for production of items requiring high impact flexural and dielectric strength, resistance to heat, moisture, etc. Experiments now under way promise to result in new and hitherto unimagined uses for flocks in the post-war period, opening new avenues for profit to those who keep abreast of the times.

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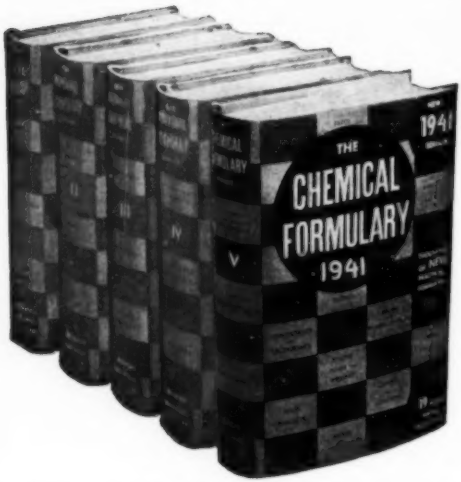

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Silk Screen Printing

AIDS THE WAR PRODUCTION PROGRAM

BY HAROLD R. JOHNSON
Nax-Dar Company

IN THE PAST YEAR or so the silk-screen process method of printing has become recognized as an important factor in the war production program. As a matter of fact, there are certain production problems for which this method of printing or stenciling is the only answer.

Many instances arise where the problem of applying a trade mark or a special design or pattern to a certain surface seems to be almost impossible. However, upon investigation it is often found that the silk-screen process method of printing offers the easiest and most economical way. This is especially true in the printing of dials, instrument panels and large metal or wood surfaces that cannot be efficiently handled by a regular printing press. It makes no difference what material the surface is; it can be glass, wood, metal, cloth, paper or any other surface.

Basically the silk-screen process is quite simple. It requires no great outlay of cash to install an efficient silk-screen process department in a plant. No great technical knowledge or training is necessary before workers of average intelligence can operate the process. A number of concerns can supply all necessary equipment and materials.

The manufacture of silk-screen process ink has been brought to an exact science and there is no guess work connected with any particular problem. Should a certain specification call for a high gloss finish there is a process color that will do exactly that. The same also holds true for a dull flat finish. Silk-screen process colors will withstand exposure to the elements for an indefinite length of time without deteriorating.

Photographic Screens Aid War Production Program

It is through photographic screens that the silk-screen process has become such an aid to the war production program. Any concern that has a particular problem of applying fine lettering or details to any surface need only contact the manufacturer of silk-screen equipment and secure a stencil that will duplicate exactly what is wanted. In most instances the copy is furnished in black and white. However, where a firm is not set up to produce their own art work, all they need to furnish is a blueprint or similar specifications and the manufacturer of photographic silk screens will handle the job from beginning to end.

Now just a word or two about

the actual mechanics of silk-screen printing. The stencil, or plate as it is often times called, consists of a wooden or metal frame which has a special silk stretched tightly across it. Onto this silk is attached either a photographic stencil or a hand-cut stencil, all depending upon the particular requirements. This silk-screen stencil is hinged to a printing base, which can be of any material so long as it is flat and smooth.

Print on Any Surface; Production Rates

The stock to be printed upon—it may be glass or metal or any other surface—is placed underneath the silk-screen stencil. The process paint, or ink as it is also known, is then placed in one end of the screen. The squeegee is then pulled across this surface. The paint is forced through the open meshes of the silk and makes a perfect impression on the surface below. This operation is then repeated on another piece.

Production rates as high as 150 to 200 pieces per hour are easily attained by the silk-screen process. When the printing is done the excess paint is scraped from the screen and the remainder is cleaned out with gasoline, kerosene or mineral spirits. The stencils can be stored away for future use after a job is completed.

Problems Solved by Silk-Screen Stencil Printing

The tremendous increase of war work in manufacturers' silk-screen photographic departments shows that there is a definite demand for the silk-screen process method of printing. As mentioned before, in many cases it is the only answer to some problems.

One particular instance that comes to mind is a concern that had a contract calling for several thousand large shipping crates for airplane motors and other airplane parts. Each one of these crates had to be identified on all four sides and on the top as well. Naturally, to letter these crates by hand would have been far too costly and would require too much time. The silk-screen process method of printing offered the perfect answer. It is possible to print on a vertical surface as well as on a horizontal surface.

Another concern had a problem of printing identification on various types of tool chests to be used by the Army Air Corps. It was decided that name plates were too expensive and the shortage of metal made it unwise to use them. Here again the silk-screen process supplied the solution economically and quickly.

One more example: A radio manufacturer, already using the process, had the difficult problem of printing on the inside bottom of a small metal container. Ordnance inspection would not approve any method but one furnishing the clarity and sharpness of a silk-screen plate. A small metal frame with a vertical handle was used for mounting a silk screen. Result: Perfect printing at a satisfactory production rate. As many as 10,000 to 20,000 impressions can be obtained from one stencil. The handling which the stencil receives during operation determines largely the number of impressions that it will give.

In conclusion it might be well to mention once more that it would pay each concern engaged in any type of finishing to investigate the merits of the silk-screen process.

HELPING A "WALKIE-TALKIE" STAND UP
One of the many U. S. Government specifications for which Maas & Waldstein supplies finishes is HOMB-ES-680-A, covering finishes for metal radio cabinets, tanks, gun carriages, trucks and other war equipment. There are six series of materials covered in this specification, including Primers and Lustreless Olive Drab, Gloss and Wrinkle Enamels. ☆ Our booklet, "Information on U. S. Government Specification Finishes," contains a list of specifications for war work and descriptions of Maas & Waldstein finishes which meet them. Send for your copy. ☆ Our engineering staff is available for developing special finishes or for assistance on any finishing room problems that are causing production delays or other troubles.
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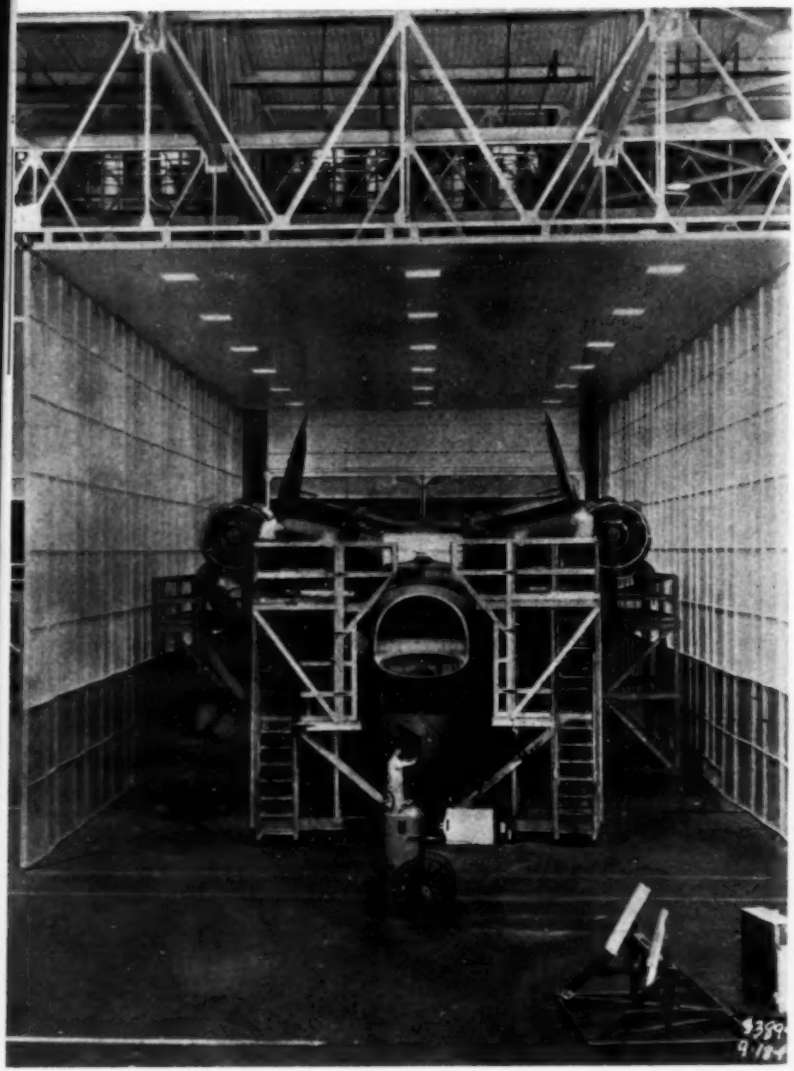


Any one of the four sections will hold a complete Martin bomber, minus wings, as shown by this head-on view. The partition can be folded back like the sides of an accordion. Photographs, courtesy of The DeVilbiss Co.

Spray Booth for Bombers

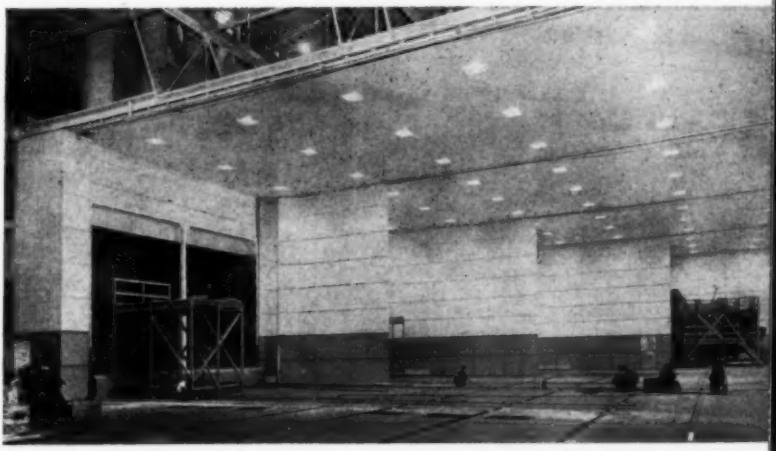
IN ONE of the Glenn L. Martin Co. plants, is one of the largest water-wash spray booths ever installed. It is 152-ft. long, 100-ft. deep and 31-ft. high, and was designed and built for painting large bomber parts and complete planes.

The booth is composed of eight compartments assembled in pairs, side by side, with an intervening 6-ft. space between pairs to accommodate motor-driven accordion partitions—31-ft. high and having a 100-ft. span. Folding partitions are also mounted on the ends.

The booth's design has several excellent features. Because of its sectional construction and folding partitions, it can be used as one enormous spray booth with 15,200-sq.ft. floor space or it can be cut into two, three or four booths, each large enough to accommodate a bombers' fuselage less its wing surfaces, see accompanying illustrations. The maximum booth space will permit a complete large size bomber to be wheeled in for painting.

There are many interesting angles in the remarkable efficiency of the exhausting facilities of this equipment.

The wash-down curtain in each compartment is 20-ft. high, and water cascades over it at the rate of 24,000 gallons per hour. This means a water fall of 192,000 gal-



Here is the complete spray booth. Accordion-type folding doors, which serve as partitions, have been extended to varying positions, from fully nested to completely open, to illustrate how the large booth can be divided into four smaller booths. The "water-fall" back is at left.

lons an hour for the complete installation—a virtual Niagara. Air is drawn through the curtain of water in each compartment by two fans (each 48-in. in diameter and each driven by a 7½-h.p. motor) developing a capacity of 31,000-cu.ft. of air per minute for each water-wash compartment. Thus 62,000-cu.ft. of air per minute is drawn through each of the eight sections. With the entire installation in operation, the 16 fans will move a total of 496,000-cu.ft. of air per minute. This exhaust system assures the complete removal of spray vapors from all parts of the booth, even on the largest painting jobs.

The design and construction of this giant spray booth marks a long forward step in speeding the bomber output and in achieving the goal of mass war plane production.

This coverall for feminine workers, designed by Nellie Don, is recommended in the interest of safety, as well as for its utility and style values. Accidents to factory workers are frequently caused by the wearing of improper clothing.—Kansas City (Mo.) Safety Council.

American-Marietta Co. Holds Annual Meeting

At the annual meeting of the American-Marietta Co. in Chicago, Ill., last month, Mr. Grover M. Hermann, President, stated that during the year the company became a large supplier of paint and asphalt products to the war program, improved its facilities for supplying the war's demands, and at the same time supplied the restricted normal requirements of its customers. Mr. Hermann stated that the company is actively planning for the post-war period and that the future possibilities of the paint business are most promising.

All directors and officers were re-elected. With head offices in Chicago, the company has plants at Kankakee, Ill., Marietta, Ohio, Lincoln, N. J., and High Point, N. C. During the year the company acquired The Ferbert-Schorndorfer Co. of Cleveland, Ohio, specializing in production of finishes for the automotive, metal finishing and marine paint fields.

An increase in net sales from $6,370,325.94 to $7,205,119.43, or 13.26% for last year for the American-Marietta Co. and its subsidiary, was reported to the stockholders of the company.

Ferro Enamel Awarded Army-Navy "E"

The Army-Navy "E" for excellence in war production now flies over the plant of Ferro Enamel Corp., after being presented to the company and its employes in an impressive ceremony, attended by high ranking army and navy officials recently at Cleveland headquarters.

Brigadier General Ray L. Avery, commanding general of Edgewood Arsenal, Maryland, officially made the award to Robert A. Weaver, Ferro president, and his workers. Presentation of the award pins to Ferro employes was made by Commander C. S. Isgrig, U. S. N.

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Reliance 61B—Finish coat O. D. Enamel

This is just one of the many Reliance "Specification" finishes that have been developed for all types of government war work equipment, such as desks, files, chairs, lockers, cabinets, beds, trailers, trucks, ordnance. In addition, we are supplying airplane finishes direct to the Army and Navy.

Whether yours is a war work or a home front problem, write us about it—there's no obligation involved in helping you.

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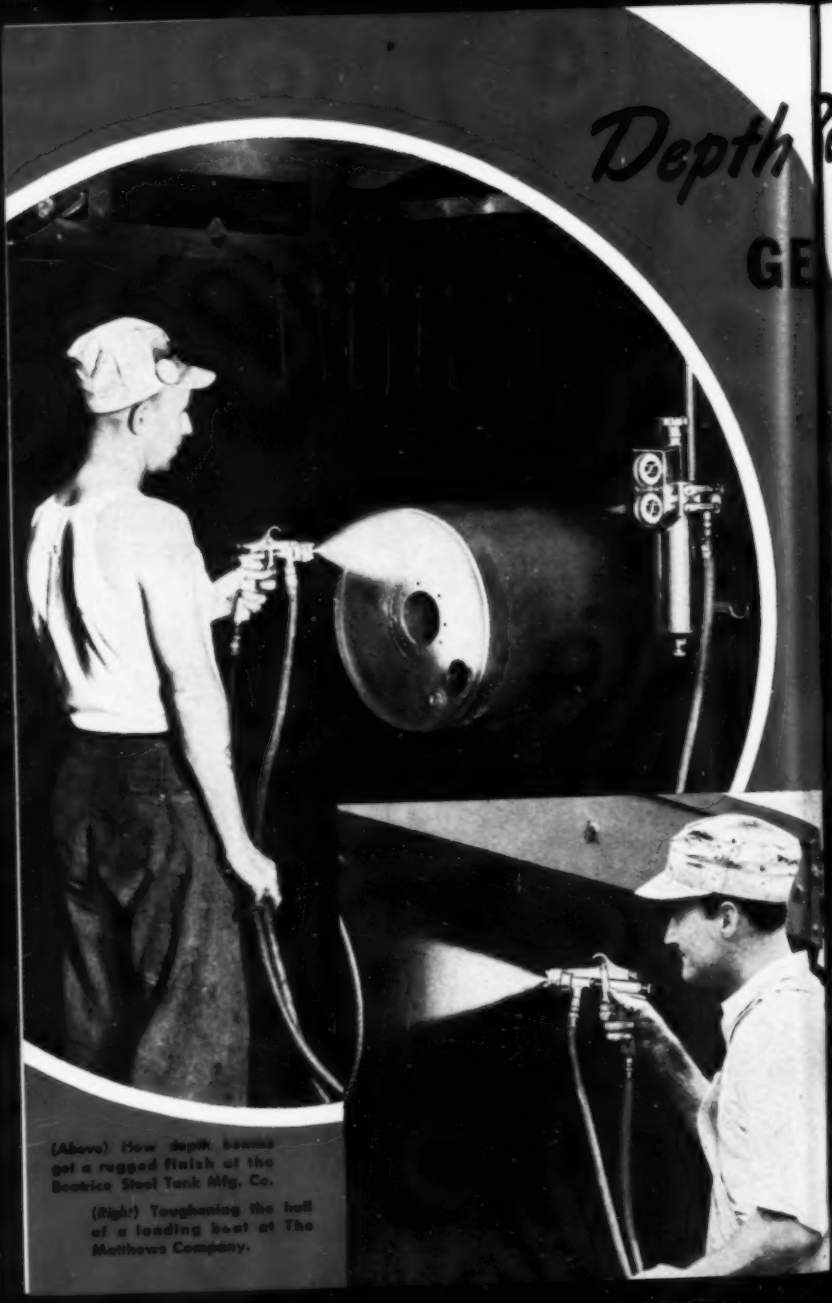


(Above) How depth bombs get a rugged finish at the Beatrice Steel Tank Mfg. Co.

(Right) Toughening the hull of a landing boat at The Matthews Company.

Bombs or Landing Boats

A SEAWORTHY FINISH with a DeVilbiss Gun

● Sea-going equipment that has to stand up against the bite of salt air and ocean spray requires unusual painting and coating operations.

Like the producers of depth charges and landing boats, shown here, many war plants that are working for our Navy have found that there's no faster or better way to apply this seaworthy finish than with DeVilbiss Spray Equipment.

DeVilbiss Guns are stepping up the flow of war products to ALL branches of the fighting services—guns, jeeps, and tanks for the Army—batteries, shells and bombers for the Air Corps—instruments, engines and destroyers for the Navy . . . to name just a few.

The United Nations need a lot more of all types of fighting equipment *in a hurry!* So, whatever your war products may be, find out what the latest high-speed DeVilbiss Spray Systems can do to help step up your output. Call the DeVilbiss man.

ARMY E NAVY

THE DEVILBISS COMPANY • TOLEDO, OHIO

Canadian Plant: WINDSOR, ONTARIO

PROUD to have won the coveted Army-Navy "E" for excellence in war production, the men and women of DeVilbiss pledge to continue giving their all-out best—for Victory.

DEVILBISS SPRAY SYSTEMS

SPRAY EQUIPMENT • EXHAUST SYSTEMS • AIR COMPRESSORS • HOSE AND CONNECTIONS

A SPECIAL EGYPTIAN CLEAR LACQUER to Apply Over Black Oxide Coatings

Experience-taught formulators in EGYPTIAN laboratories have developed this special lacquer to provide needed protection against salt spray and staining in handling Black Oxide Coated articles.

Many war contracts require such protection.

Oil, sometimes used for this purpose, is at best a temporary expedient. It has no advantages beyond immediate protection. Articles so coated are unpleasant and hard to handle.

EGYPTIAN Special Clear Lacquer used over Black Oxide Coated articles, is meeting with unqualified success on all fronts. It provides full protection against staining and spotting from handling, and also against that destructive ally of corrosion—salt spray.

Let us send you a sample of this new EGYPTIAN finish, and information about other EGYPTIAN items that are triumphing over the harsh uses and frequent abuses of war service.

Have you a copy of our loose-leaf booklet, "U. S. Government Specification Finishes," indispensable to war plants with metal finishing problems? Just ask for "Spec" Book IF

These are a few of the more important Government "Spec." finishes which we can furnish. For more complete list send for "Spec. book.

R-E/M R. 251-600
SYNTHETIC TYPE
PROTECTIVE COATING

JQD-164-A
LUSTRELESS
BLACK BAKING
ENAMEL

AXS-736 (Rev. 1)
CLEAR FINISH
FOR STEEL CARTRIDGE CASES

AXS-680
LUSTRELESS LACQUER ENAMEL
FOR AMMUNITION

AXS-684
TYPE I and II
LUSTRELESS PAINT FOR AMMUNITION

3-162-A
NITROCELLULOSE LACQUER ENAMEL
FOR AMMUNITION

P-27-b-2
ZINC CHROMATE PRIMER

86
ZINC CHROMATE PRIMER

AN-TT-P-656
ZINC CHROMATE PRIMER

PRS-979
LACQUER ENAMEL FOR AMMUNITION
(CELLULOSE TYPE)

THE EGYPTIAN LACQUER MANUFACTURING CO.
ROCKEFELLER CENTER, NEW YORK, N. Y.

EGYPTIAN
Superior FINISHES

The subject of paint reclamation was discussed previously in an article which appeared in the May 1942 issue. From the many inquiries that have been received, it has become evident that it would be desirable to discuss the consumer's part of the operation in greater detail. In this article I have, therefore, attempted to give complete information concerning the proper method of collecting overspray for reclamation.

This information should be helpful to those who wish to cooperate with the Government in the conservation program and reduce their finishing costs.—

John J Zolad

Overspray Recovery

BY JOHN J. ZOLAD*

DURING the few years immediately preceding the war, recovery of overspray was rapidly becoming established as a regular part of industrial finishing operations. Attractive reductions in finishing costs were being realized, particularly in the automotive and household-appliance fields.

In the present war program, overspray recovery has an added value because it is a means of conserving the critical ingredients used in Government specification coatings. Its value in this connection has been recognized by the War Production Board and by the Armed Forces, who are actively promoting recovery as a conservation measure. Co-operative action by the paint manufacturing industry and its consumers can make it one of the notable wartime painting achievements.

In the May, 1942, issue of INDUSTRIAL FINISHING, some of the fundamental aspects of paint reclamation were described briefly in an article entitled, "Conservation of Critical Materials in Sprayed Coatings." The closing sentence of that article stated:

"With proper collection of sludge and suitable reclaiming procedures,

*With Industrial Coating Engineers, . . . General Motors Building, Detroit, Mich.

it is possible to secure reclaimed material which, in most cases, is equal to the original in all properties, including durability."

Since intelligent co-operation on the part of the consumer is a prerequisite to successful reclamation, it may be well to outline the precautions which the consumer should observe in collecting overspray, preparatory to returning it to the paint manufacturer for reclamation. In addition to describing the proper method of collection, an attempt will be made to define the conditions under which reclamation is an economically feasible operation.

Overspray Is Valuable Material

Probably the first thing to be done is to educate the personnel of the finishing department to regard the overspray as a valuable material. In the past, paint overspray collected in water-wash spray booths has been commonly referred to as "sludge," a waste product which was discarded. No particular attention has been paid to the method of collecting it or keeping it uncontaminated with other refuse.

The word "sludge" has come to denote a material of no value. Paint overspray which is to be reclaimed should, however, be likened to a raw material from which paint will be made. The quality of the reclaimed paint and the cost of reclaiming will depend largely upon the care taken in collecting the overspray. To distinguish between the two kinds of material, we shall refer to the material which is to be reclaimed as "paint overspray."

Avoid Mixing Different Kinds

Only one type of paint should be sprayed in a water-wash recovery unit. In some cases, the same booth may be used for two types of paint, provided there is a cut-off point and the collected overspray is removed. Do not mix two types of overspray. Where segregation is not practicable, the reclamation of a mixture of two or more colors of mutually compatible types of finishes may be worthwhile, provided that the reclaimed mixture, usually of neutral color, can be used to advantage as an under-coat, ground-coat, sealer-coat, or finish for unimportant or concealed parts.

It is Important to Keep Overspray Clean

1) Contamination of paint overspray with foreign materials must be avoided. Metal objects, such as conveyor hooks, spray nozzles, bolts, and nuts, are apt to damage reclaiming machinery. Orange peels and similar refuse contaminate the paint with particles that will later disintegrate and cause film failure. Gloves and cloth wipers are apt to be ground up in the reclaiming machinery and it is sometimes almost impossible to filter out such materials. Extreme care should be taken to prevent paper or cardboard from getting into the collected overspray. Paper disintegrates and the pulp will be dispersed throughout the reclaimed paint. It is impossible to selectively filter paper pulp from the pigment.

2) Dried overspray, such as scrapings and sweepings from the dry parts of the booth, should not be added to the water-wet overspray which is to be reclaimed. In rare instances, where a relatively non-oxidizing finish is sprayed, the dried overspray may be reclaimable into usable material. Where such overspray has been found to have a salvage value, it should be

Lowe Brothers Delivers

. . . and so does this maker of Portable Buildings for the Army Air Forces

A certain contractor was puzzled. He had an order for portable buildings which the Army Air Forces demanded be finished to withstand the rigors of world-wide climate—not to mention the punishment of frequent knock-downs and reshipments.

That's where Lowe Brothers came in — with their knowledge, they easily cleared up his concept of the specifications for the finishing materials required. Then, Lowe Brothers quoted on and quickly supplied the necessary materials to the satisfaction of all concerned.

You, too, may profit from Lowe Brothers experience with U. S. Government Specifications. Consult us for information on bids, costs or drying schedules —or for advice on any industrial finishing problem.

INDUSTRIAL SALES
THE LOWE BROTHERS CO.
DAYTON, OHIO

Lowe Brothers
WARTIME FINISHES *for Industry*
IN ACCORDANCE WITH U.S. GOVERNMENT SPECIFICATIONS
AND MAINTENANCE PAINTS
TO MULTIPLY YOUR MAN POWER EFFICIENCY

scraped off as frequently as possible and immediately placed under water, as directed below.

3) Collected overspray should be kept covered with water at all times to avoid oxidation. Once the vehicle in the paint is exposed to air, oxidation occurs, the overspray is beyond recovery as a useful material. To this end, overspray should be removed from the tanks regularly. This is generally done during the lunch period and at the end of each shift.

Spray-Booth Compounds May Contaminate Overspray

4) In the operation of a water-wash spray booth, it is generally necessary to add a chemical to the water to keep the overspray from fouling the flood sheet, nozzles and the circulating system. There are a number of so-called spray-booth compounds on the market. Although these may function efficiently in keeping the spray-booth system clean, they may not yield a reclaimable material. In most cases there is a chemical reaction between the spray-booth compound and the paint, which is detrimental to the quality of the reclaimed product. The choice of a suitable recovery medium can be determined by trial in each individual case. Although it may not be absolutely essential, it will be generally advisable to use a recovery agent, such as Bricate, which has been especially formulated to facilitate reclamation.

The following general principles should cover the use of overspray recovery agents:

First: Use the minimum amount necessary to keep the spray-booth system clean and to yield a reclaimable material.

Second: Keep a record of additions of compound and of the alkalinity of the water (determined very simply by adding two drops of Eimer & Amend B.D.H. Universal Indicator to about 20-c.c. of solution, or by means of a Fisher Alkacid Tester Ribbon).

Third: These data should be tied in with the removal of the various lots of overspray. The purpose of this is to enable the reclaimer to trace the causes for improvement or impairment of the quality of the overspray from lot to lot.

5) Returns should be made in clean, open-head drums. The drum in which the original material was shipped will be satisfactory if it is not contaminated with skins. Drums that have previously contained asphalt, lubricating oil, cutting oil, etc., will contaminate the material so that it cannot be successfully reclaimed. At least 4-in. of water should be placed on top. The purpose of this is to prevent oxidation. It is desirable to identify the contents of return drums by indicating the type of paint overspray and the location from which same was recovered.

6) Collected overspray should not be stored for prolonged periods in a place that is above normal temperature. It is desirable that it be processed shortly after it is recovered. Best results are obtained by setting up a fairly prompt collection recovery re-use cycle.

An appreciable saving in man hours is obtained by the use of conveyorized cleaning, painting and paint-drying equipment, since the entire cycle is automatic and operators need only concern themselves with loading and unloading the work. In addition these conveyorized machines are pace setters and deliver a large volume of accurate dependable work at a high production rate.

Walker's LABORATORY GOES TO WAR!

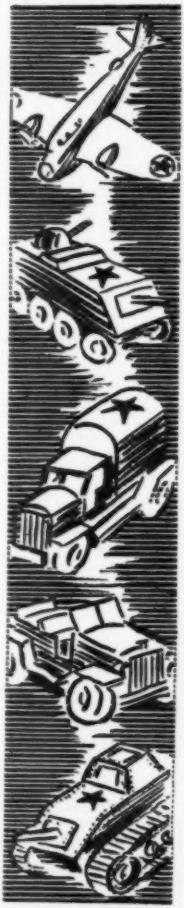
Walker's chemists have developed Protective Coatings that stand the pressure of unusual stress or strain—that protect against extreme weather conditions—that are flexible enough to meet unusual requirements—that adhere to all surfaces and meet government specifications.

Walker's finishes are at all the battlefronts, on land, on sea and in the air doing the job for which they were developed.

"Call on Walker" to help solve your war production finishing problems.

PRIMERS
SURFACERS LACQUERS
WRINKLES SYNTHETICS

"Call on Walker"



H. V. WALKER CO.
Elizabeth, New Jersey
MODERN PRODUCTION FINISHES

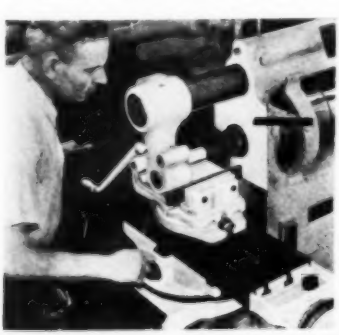
Color of Machine Parts

CAN IMPROVE WORKERS' PRODUCTION

BY HAROLD BRAYMAN
E. I. duPont de Nemours & Co.

IT IS A safe bet that the future will find production machinery of most types clad in paint coats as gaudy as once they were drab.

Modern finishing practice even today calls for the over-all application of light instead of dark gray or green finishes. At the moment, the working areas of thousands of machines in manufacturing plants are being "spotlighted" in light buff or light green, according to the hue of the material being worked upon. These will be tomorrow's conventional colors.



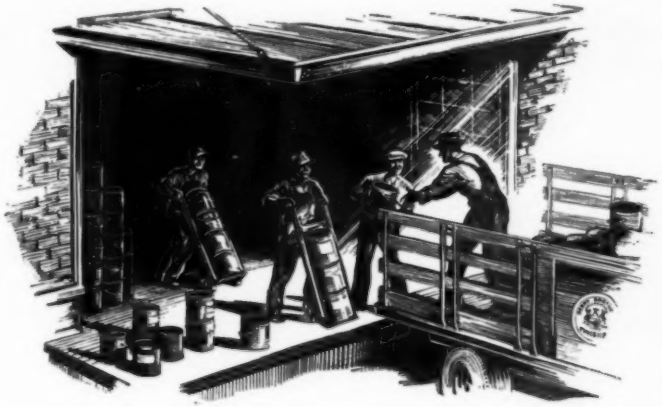
After the body of the machine is painted with Horizon Gray and the working surfaces are given a contrasting hue, such as Spotlight Buff, the "camouflage" is removed and the material being worked stands out in sharp contrast.

There is nothing faddish about this rapidly expanding application of bright paint. It is based upon scientific findings coming out of a 3-year research program conducted jointly by Du Pont Co. color technicians and Philadelphia Electric Co. illuminating engineers. Not in the laboratory, but in tests under actual shop conditions and wide subsequent adoption throughout industry, it has been proved conclusively that bright, contrasting finishes on production machinery results in increased safety and efficiency, as well as improved employe morale.

Remove Dark "Camouflage"; Spotlight Work Areas

The term applied to the technique, "Three-Dimensional Seeing," is descriptive of its chief function. The camouflage created by dark, drab machinery is removed by the "spotlighting" of working areas. Operators see their work in three dimensions, sharp and clear. Errors in fabrication are cut to a minimum. Flaws are quickly detected. Valuable illumination is reflected and utilized instead of being absorbed and wasted by dark surfaces.

Ceilings and side walls, when painted in scientifically selected colors, become light reflectors in-



Doorway to Allied Victory

There are many American doorways to Allied victory . . . simple, unpretentious doorways, deeply scarred by the hurried shipment of vitally needed war materials.

Out of this Berry Brothers' doorway, for example, go primers, lacquers, and camouflage materials for America's most famous fighters and bombers . . . as well as paints, enamels and other finishing materials used in armament production.

Despite the urgency of wartime demands, however, the quality of Berry Brothers Industrial Finishes is being rigorously maintained.

Laboratory and technical personnel has been substantially increased, and the knowledge gained in the production of wartime finishes, supplemented by continuous research, will be available for post-war needs.

Now serving the war effort to the utmost, Berry Brothers will be ready, when the war is over, with the finishes needed then.

BERRY BROTHERS

Quality Finishes Since 1858

INDUSTRIAL VARNISHES • ENAMELS • LACQUERS

DETROIT, MICHIGAN • WALKERVILLE, ONTARIO

JERSEY CITY • BOSTON • CINCINNATI • CHICAGO • ST. LOUIS

stead of light robbers. In fact, illumination in many plants can be doubled without altering existing lighting facilities or increasing wattage consumption, by the proper use of paint colors having a much higher reflection factor than has previously been considered practical in shop and factory. Valuable lost-light is salvaged.

A ray of light shouldn't be allowed to turn up its toes and die because it falls on a flat surface, the illuminating experts at the meeting were reminded. If given half a chance, a light ray will bounce back like a rubber ball from ceiling, floor, walls and machines repeatedly. Thus valuable electric power produces illumination that does its job over and over again.

Promote Worker Efficiency With Light-Colored Surfaces

In many plants, it was pointed out, a well-designed lighting system is robbed of its efficiency by dingy interior surfaces. Machinery in battleship gray and dark oil-stained floors soak up enormous amounts of light annually. Operators at machines usually have far less than perfect visibility as a result.

"If maintenance engineers will put into use the recommended high light-reflective paint colors with proper hue contrast," the Du Pont color expert advised the assembled lighting engineers, "incalculable amounts of power will be salvaged and priceless hours lost from injury will be avoided.

"There is far more to this use of paint to enhance industrial seeing conditions than the indiscriminate application of, for example, flat white paint," he warned. "Glare must be avoided. Maintenance problems must be respected. Color combinations are desired to increase visibility through contrast. Working areas must also be in strong contrast with the material being fabricated or a dangerous state of camouflage exists.

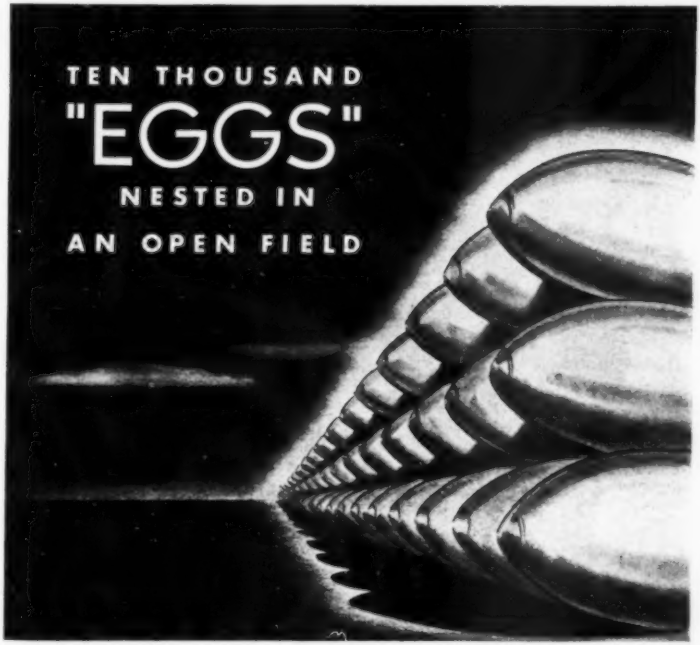
"*You wouldn't finish the keys of a piano in the same color as the piano case,*" it was said in conclusion.

"It has been found possible to work continuously and comfortably over floors that reflect as much as 80% of the light. At the moment few shop and factory floors—not to mention other surfaces—reflect more than 20% of the light provided."

What Tests Revealed About Reflected Light

In developing these principles, paint technicians and illuminating engineers chose for test purposes a factory conference room with dimensions not particularly favor-

Salvaging light requires two coats of white deck paint. This has a tough surface and reflects 85% of light. We just aren't used to such light floors, so to "keep 'em down" and also to prevent scratches from being too conspicuous, this surface will be stippled with "dust green."



LARGE scale bombing operations necessitate open-air storage of thousands of bombs. And that, of course, means paint for camouflage. Most bomb manufacturers, however, have no facilities for the baking a serviceable finish would require. Rather than construct costly ovens, they turned to Arco Infray, which dries rapidly without baking.

Infray is an achievement of the Arco Research Laboratories—one of many recent demonstrations of Arco's ability to meet specific needs with specialized products, tailored to fit. Those Laboratories will gladly help you find the solution to any problem paint can solve. Your inquiry will be handled without delay.

War Paints for Industry **THE ARCO COMPANY**
CLEVELAND, OHIO · LOS ANGELES, CALIFORNIA

Women in industry are benefited from a new system of painting machinery in lighter, brighter colors for contrast, improving the "seeing" ability of the operator and thus increasing production and reducing accident hazards.

Here a girl operator at a towel-folding machine works more safely and quickly because the once drab gray paint has been refinished in a pleasing pastel green with spotlight painting in Chinese Red and Horizon Buff. The transformation is based on a survey conducted by Du Pont color experts in cooperation with lighting technicians of the Philadelphia Electric Co. Red is used for such danger points as the towel-counting device near the operator's right hand, and buff for guards on "loader" wheels and other parts on the working area which need highlighting for easier seeing.

able for high light utilization. The room—11-ft.4-in. by 22-ft., with a 10-ft. ceiling—was lighted by two 500-watt silvered-bowl incandescent lamps with 18-in. drop cords. The white ceiling and side walls, with gray dado, had lost much of their original whiteness and reflection value. The floor was dark maroon, and the room was equipped with dark mahogany furniture. Under these conditions, there was a coefficient of light utilization of 27%.

As a means of increasing illumination, various sections of the room were repainted in high light-reflective colors. First, the ceiling was refinished with light cream paint. This raised the coefficient of light utilization from 27% to 35%.

Then, in successive steps, the side walls were refinished with a neutral green paint; the dark table and chairs were replaced with blond furniture and, finally, the dark maroon floor was recoated with white floor paint stippled with spruce brown.

By this planned use of all reflecting surfaces, particularly the floor, the coefficient of light utilization was brought up to 55%, an improvement of more than 100% over the original arrangement. And *this was achieved without installing additional lighting equipment!*

War Production Factories Helped by Reflected Light

Following this test, large-scale applications were made in several war-production plants to verify the results experimentally developed. The floor of one large machine shop was finished with a gray paint having a reflection factor of 60%. This color change, alone, increased illumination considerably and greatly improved the ability of machine-tool operators to work more safely and efficiently. Moreover, it improved good housekeeping. Scattered tools and debris on the floor became so obvious that workers voluntarily eliminated these stumbling hazards.

Both the floors and tables along the assembly line of an aircraft plant were painted in light colors. Besides making possible a more efficient use of floor space, these light-colored floors, in effect, put under the workmen's feet a reflecting "ceiling," from which the light "bounced" up, affording good visibility on all sides of the parts under construction.

STAINS
GLAZES
SHELLAC
ENAMELS
UNDERCOATS
LACQUERS
SEALERS
NOVELTY FINISHES
IN STEP WITH THE TIMES
Industrial Finishes
that make the most of available raw materials to give you greatest durability, together with attractive appearance and economy.
FOR APPLICATION BY ALL METHODS
JAMES B. DAY & CO., CHICAGO

In another factory where uniforms were being made, sewing machines were painted in neutral green and the tables in light cream. This combination increased illumination at the needles over 100%, and with less eyestrain and retinal fatigue for the operators.

Since it is generally accepted that more than four out of five of all mental impressions are received through the eyes, it is understandable that any factor which aids seeing has a direct and fundamental effect upon machine operators. This fundamental effect — it has been established — results in increased production, reduced personal injury hazards, better working conditions and improved employe morale.

An illumination problem — lighting the underparts of planes under construction — was solved by painting the floor of this assembly line a light color. The reflection factor of the gray floor is 60%, much higher than has previously been thought practical.

We have sold several striping tools for the identification of alloys in bar stock. The stripe of a certain color is run the full length of the bar, identifying that type of alloy not only in the stock room but also in the factory, until it is entirely used up. You see my point. Identification of that bar is not lost as pieces are cut off in machining.—Beugler Mfg. Co.

Hundreds of specially schooled paint-service engineers are on call for quick service in attacking war contract finishing problems. Manufacturers will often speed operations on vital goods by calling one in for information, service or help, whether there are kinks to be ironed out or the latest time-saving methods to be learned.

Substitutes to Replace Critical Shortages

Faced with increasing shortages of materials, American industries for the first time in their history are hard pressed for adequate substitutes or alternates. That some industries are continuing normal operations, despite critical shortages, indicates substitutes in plentiful quantities are available, but for the majority of industries the problem remains of which substitutes to use and where to find them.

The Berliner Technical Research Organization, 225 Fifth Ave., New York, N. Y., now announces a service aimed at solving this perplexing problem. Not only does it offer information on substitutes for items on the critical list but gives precise information on the available sources, specifying names and addresses.

The Berliner information is issued on loose leaves in a system of continuous monthly supplementary reports so that one who subscribes may keep pace with the swift and revolutionary technological changes occurring under the impact of war. The service is a constant inspiration for new ideas, new products, new methods, new processes, new formulas and new technics. Subscribers seeking highly specialized information not contained in the regular service, are offered individual consulting privileges.

Presenting the UNUSUAL

If you are making products for Civilian use . . . To achieve favorable attention in today's tempo of life requires a presentation of the unusual. To accomplish this we offer the services of our Creative Studio, where attractive and protective finishing schemes are conceived for products of wood or metal.

If you are making products for War use . . . . . We are offering a line of protective coatings that meet U. S. Government specifications and stand up under severest tests.

No Tampering with Quality

Write us about your requirements. Your inquiry will receive prompt attention.

ROCKFORD VARNISH *Company*
ROCKFORD ILLINOIS

Manufacturers of Protective and Decorative Coatings

Weather-proof Silk-Screen Enamel

Naz-Dar Co., 477 Milwaukee Ave., Chicago, Ill., makes the following statement about its weather-proof silk-screen stencil enamel:

"Experience has proved that our weather-proof silk-screen enamel is the ideal type of silk-screen process color for over 90% of all war printing. Weather-proof enamel is used for printing upon glass, metal, acetate surfaces, wood and all kinds of fabric.

"Another interesting factor about weather-proof enamel is that it is made up from non-critical materials and can be secured without the necessity of a priority rating. We do not anticipate that this material will be put on priority."

Stamping, Embossing Foils in Color

Imitation gold, aluminum and color foils for stamping and embossing purposes are announced by Peerless Roll Leaf Co., Inc., 4517 New York Ave., Union City, N. J. Master rolls are 24-in. wide and 200-ft. long. Cut rolls are available in any desired widths and in lengths of 100 to 400-ft.

Genuine gold is sold in rolls of various widths and lengths. Genuine gold, imitation gold and aluminum and some color foils are mounted on glassine. The company also supplies equipment for using these foils—such equipment as presses, heating plates, heat controls, roll leaf cutters, etc.

Cleaner for Aluminum and Magnesium

According to a bulletin issued by Mercury Chemical Co., Inc., 2706 David Stott Bldg., Detroit, Mich., "Mercury No. 9" started off with three "musts." First, it must not harm aluminum. Second, it must produce a chemically clean surface without prior vapor-degreasing. Lastly, it must work quickly, in still tanks—so quickly that cleaning could take its place in the fast cycles of modern production.

New . . .

MATERIALS
SUPPLIES
EQUIPMENT

Mercury No. 9 is now doing these things at Army air depots, in huge bomber plants and plants of small fabricators; in cleaning formed and machined parts; as a fast efficient preparation for anodizing, alrocking, dichromating and other surface conditioning; and as a cleaner before deoxidizing for spot-welding. This cleaner also removes zinc chromate primers, lacquers and paints, easily and without labor.

The cleaner designated as "Mercury No. 9" is a powder, used 6-oz. to the gallon of water, at from 185° to 212° F. If heavy drawing compounds are to be removed, it may be necessary to use No. 9 at boiling temperatures, and 8-oz. to the gallon.

No. 9's companion product for power washers and vapor-type cleaner-strippers is No. 8.

"Thermotite" System of Aircraft Finishing

The Sherwin-Williams Co., Cleveland, Ohio, announces the development of the "Thermotite" system for the finishing of aircraft. It is an adaptation of aircraft finishing materials to elevated temperature methods of application. The result is the reduction of viscosity of organic finishing products through the medium of heat and without the excessive use of solvents in formula, manufacture and application. In so doing the solid content of these materials, when so used, is maintained at relatively high and desirable level, thereby securing

An Announcement

TO THE CUSTOMERS AND FRIENDS OF

THE FERBERT-SCHORNDORFER COMPANY

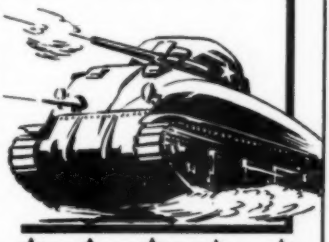
THIS COMPANY has become, by purchase, a subsidiary of the American-Marietta Company. No changes in administrative personnel are to be made. No changes are to be made in the policies and operations that have made this company a leader in the production of finishes for the automotive, metal finishing and marine paint field.

This coalition of business interests has been accomplished at a time when our volume is at an all time high, with 95.7% of output being war finishes. It will bring about no essential changes in our products nor in our customer relations, but rather will enable us to broaden the scope of our service through the combined facilities of both companies, and conversion to your needs upon the war's end will be expedited. The flexibility of our processes will permit a rapid adaptation to the new methods and new products that will inevitably come with the return of peace. It may not be too soon to discuss with us your needs for tomorrow, or the day after.

★ ★ ★ ★ ★

WAR PAINT

Ferbert-Schorndorfer Products are protecting United States tanks and fighting trucks on the battle fronts of the world—against burning African sun, jungle moisture and heat, bitter snows and freezing winds at the top of the world.



★ ★ ★ ★ ★

F-S

THE FERBERT-SCHORNDORFER CO.

12815 ELMWOOD AVE • CLEVELAND, OHIO

equivalent film thickness with a lesser number of spray operations.

Thermotite is sprayed at temperatures ranging from 160° to 180° F. The material at shipping body is used without customary reductions with thinner. The reduction to suitable spray consistency is accomplished through the medium of heat, therefore adequate equipment for proper temperature control and material flow is necessary. Successful operation is dependent upon careful unit design and proper installation of supply tanks, supply lines to units, and the reliability of equipment for maintaining suitable air or pump pressure to force dope to and through the units.

The Thermo-spray unit for the application of Thermotite operates quietly, effectively and simply. No intricate or complicated controls, electrical or otherwise, form hazards to safety or uninterrupted service. Installation of the equipment and connections to the source of heat supply offer no serious problem. The units are compact, light in weight and self-contained. Connections to present supply tanks and pipe lines to spray booths are easily accomplished. Return lines to auxiliary supply tanks are unnecessary.

Thermotite may be pumped from original drums direct to Thermo-spray units or, as is the usual custom, emptied into main supply tanks to be pumped or forced under air pressure from main supply pressure tanks through supply lines to units, which are established at suitable points of usage throughout the plant.

Production of practically every conceivable device for war or civilian use requires sanding, rubbing or polishing. Accordingly, surface-conditioning practices have received the careful attention of production executives. The importance of surface smoothing operations in war production can not be too strongly emphasized.

The material at heavy consistency and under forced feed enters the unit reservoir. Heat transference is from steam (or hot water) passing through a series of cylinderical copper coils, these coils immersed in the surrounding dope. Material is heated to the predetermined temperature and is constantly maintained at proper spray consistency and under automatic control irrespective of the consumption demand.

Prolongs Life of Anodizing Rack

The high cost and short life of sulfuric or chromic process anodizing racks has long been a major problem with many manufacturers. Naturally, these processes have been extremely hard on rack insulation and the rapid insulation breakdown on these racks has been costly, not only in damage to the racks, but in wasted current in generator overloads.

A recent engineering development in the insulant field has, however, made anodizing rack protection a reality; it has multiplied rack life, reduced "rejects" to a minimum and reduced current consumption to just what the work requires.

This new insulant, known as "Bunatol," has been engineered by Nelson J. Quinn Co., Toledo, Ohio. In addition to possessing all the other qualities of a superior insulant, it has one outstanding characteristic which is chiefly responsible for prolonging anodizing rack life. This characteristic is permanently greater flexibility.

Pictured here is a typical spring-clip type anodizing rack, Bunatol-insulated. This tough, splendidly ad-

PROTECTIVE COATING

(patent applied for)

It is now speeding production on Bombs, Shells, Ammunition, Aircraft parts, ship machinery, turbines, and in many other plants making war products.

Dries like lacquer. Has durability and build of Synthetics.

Can be air dried or baked, sprayed or dipped. Produces a dull flat finish. Air dries to handle in 3 to 5 minutes; to pack and ship in 60 minutes.

Has unusual adhesion. Supplied in any color. Gives more mileage and greater coverage. Saves money.

To speed up production and cut costs—send for complete information and Technical Bulletin "905" P. C.

STANDARD VARNISH WORKS

NEW YORK — — CHICAGO

hesive coating provides a flexibility in keeping with the flexibility of the spring-clips themselves, therefore it does not become brittle, crack or peel when the clips are flexed. Because this flexibility is retained for the life of the insulation, it retains its efficiency and provides maximum rack protection until the contacts are entirely eaten away.

Bunatol has already been adopted by many large production shops where anodizing rack life has been prolonged so greatly that its users are not yet able to state specifically just how greatly rack life has actually been increased.

Drum Plug Wrench

The accompanying illustration shows a special wrench designed for removing and tightening plugs or bungs in steel drums. It is a time-saving practical tool that will solve the problem in many departments where all classes of drums are handled. This tool is

It fits all sizes.

manufactured in steel alloy with long iron-pipe handle; also in "S monel" metal which has low-sparking qualities. It is a product of Industrial Products Co., 2820 N. 4th St., Philadelphia, Penna.

More About Metalizing Wood Caskets

I READ with interest an article in the December issue of INDUSTRIAL FINISHING (pages 100-102) entitled, "Metalizing Wood Caskets." Since I have been in this kind of work for over ten years, I believe I can make some suggestions that will improve the system outlined by C. Nagamor.

Passing over the drying and sanding of the wood, which should not be slighted, I will start with the finishing. First we spray one coat of clear lacquer sealer. This sets the loose wood fibers so that they can be sanded off easily. The real advantage in using this coat is that when later coats of surfacer are sanded through, the sanderman will see the wood shining through, and will quit before sanding through the sealer coat. In this way we avoid the danger of our final coats raising the grain.

Next, a double spray coat of surfacer is applied, after which all nail holes and imperfections are puttied. The nail holes and small cracks or dents can be seen much easier after this first coat of surfacer has been put on. We use a pyroxylin putty. After the putty has dried it is sanded level with No. 3/0 sandpaper. Then another double spray coat of the same surfacer is applied.

This last coat of surfacer is wet sanded to an absolutely smooth and flawless surface. It is possible to wet sand to a smooth surface much quicker than by dry sanding. To avoid the danger of swelling and loosening the glue joints, we use Varsol as a lubricant instead of water. Wet-or-dry sandpaper No. 320 gives satisfactory results.

Finishing from here on can follow the regular methods for finishing metal caskets. We get satisfactory results by omitting the coat of lacquer primer.—ART CLARK.

By-products of the manufacture of coke from coal include not only solvents but also materials for an important group of synthetic resins, namely, the paracoumarone-indene resins.

ZINC CHROMATE PRIMER

Consult O'Brien on your requirements for government approved war materiel finishes.

Among our several specialized products which are being used with particular success by war materiel manufacturers is O'Brien Zinc Chromate Primer (AN-TT-P-656) — a high quality rust inhibiting finish for priming of metal, especially non-ferrous. Let us quote on your requirements.

SEND FOR DATA SHEETS—Detailed, up-to-the-minute information on use and application of O'Brien ES680, AXS680, AN-TT-P-656 and other war finishes sent free on request.

O'BRIEN VARNISH COMPANY, SOUTH BEND, INDIANA

Haydenite in Raincoats Replaces Rubber

A new synthetic which is replacing rubber in army raincoats and which, it is expected, will soon replace rubber in many other products using waterproofed fabric, is announced by the Stanley Chemical Co., East Berlin, Conn.

Here is the story:

When the manufacture of automobiles was stopped, the government had on its hands large quantities of the plastic used in the production of safety glass. It also had on its hands the annoying problem of how to replace rubber in raincoats, life-belts, tarpaulins, hospital sheets, pontoons, and scores of other items vital to the efficient functioning of our armed forces.

Major Frank M. Steadman of the Research and Development Section of the Quartermaster Depot at Philadelphia had an idea. Possibly those problems could be made to cancel out. Perhaps a surplus, through the medium of the test tube, could satisfy a shortage—a particularly vital shortage affecting the fighting efficiency of our armed forces.

He was right. First from the Stanley research laboratories, then from the Stanley plant in carload lots, came a brand new synthetic formulated from safety glass plastic and named "Haydenite" for Stanley's Technical Director, E. M. Hayden. Better than rubber, cheaper than previous waterproof coatings, easier to apply than other synthetics, Haydenite sounded the death knell of rubber for army raincoat use—and for all requirements involving the use of waterproofing fabrics.

Continuous conveyor oven, tunnel type, for baking the coatings on mines. Photo., courtesy of Despatch Oven Co.

Liquid Dustproofs Cement Floors

Concrete dust, a dangerous, costly foe of efficiency, is not ordinary dust. It is a sharp silicate which causes damage in every direction, to men, machinery and production.

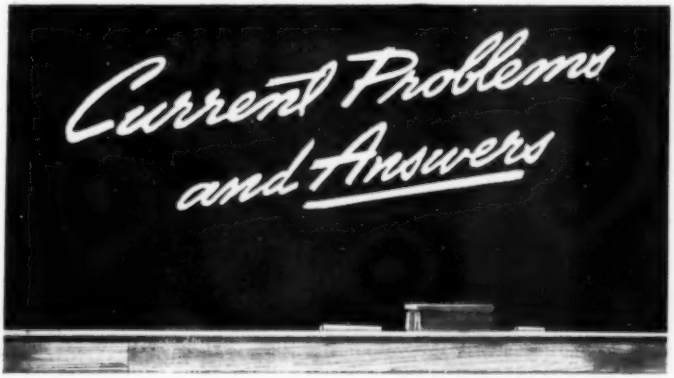
A new transparent penetrating liquid not only permanently dustproofs but also makes the concrete waterproof and crumbleproof, thus greatly increasing its resistance to traffic and preventing the formation of ruts and holes.

This compound (Evercrete) is easily applied without interfering with the general business routine. It penetrates immediately. Put the liquid in a pail or watering can, flush it on the floor and slosh it around evenly with a long-handled broom or brush until the concrete will not absorb any more.

It is an excellent binder too, for surfaces that are to be painted. . . . A product of Evercrete Corp., 19 W. 44th St., New York, N. Y.

Infra-Red Drying Lamps

A new and revised bulletin which illustrates and describes infra-red drying lamps and drying-lamp installations for paint drying, is announced by the Lamp Division of Westinghouse Electric & Mfg. Co., Bloomfield, New Jersey.



Problem No. 3 "Long Distance No See"

. . . thus do our Oriental friends describe that well known military trick: CAMOUFLAGE. In war, everything that may become the object of military attack must be made as inconspicuous to prying enemy eyes as possible: Everything from ships and guns, and tanks and trucks, to cans of fuel and cans of food, and now even pipes for oil pipe lines.. The finisher's job is to meet these requirements on every article furnished to the armed forces.

The Answer

Our laboratories have made exhaustive studies of both visible and invisible light reflectance of finishes. The results of these studies are available to finishers working on government orders. We invite you to make full use of our advisory service in seeking proper formulas or in working out application problems.

TOUGH JOB HEADQUARTERS

Rx Prescription Finishes

Give us your metal coating problem. We guarantee you an answer based on your conditions, and not just a standardized formula.

THE WATSON-STANDARD CO.

Manufacturers of

PAINTS . . . VARNISHES . . . INDUSTRIAL FINISHES AND LITHOGRAPH COATINGS

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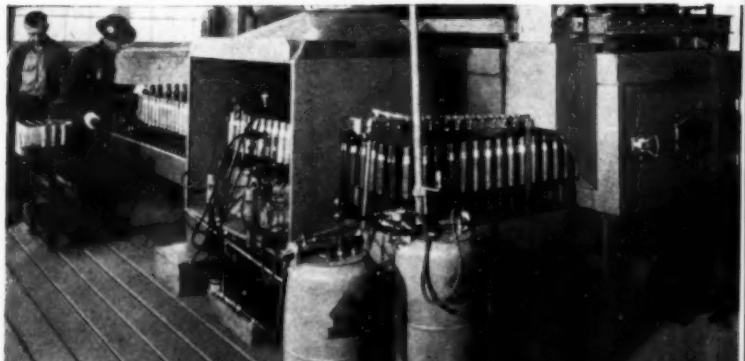
★ ★ ★ ★ PERFECT COATING ON 998



Paasche Automatic Equipment Licks a Tough Finishing Problem

War Department specifications No. AXS-736 allow only 0.0001 + or — tolerance on the film thickness of the coating applied to steel shell cases. Air-painting-equipment geared to mass production was required for the job.

Shown above is the operation in one large war plant, where a Paasche air-painting unit automatically coats the interior and exterior of these steel shell cases. The finish applied is so uniform in thickness and perfect in quality that an average of 998 out of every 1000 cases are declared O. K. and pass rigid inspection.

Paasche was prepared to meet the exacting specifications for this job because the organization has pioneered

Paasche AIRPAINTING EQUIPMENT

0[illegible]98 out of 1000 Steel Shell Cases

the development and refinement of precision-control application. Some of the first shells used against the Axis in this war were coated on Paasche automatic units.

While your product requirements may not be so exacting, the same kind of precision automatic painting or coating equipment is available or can be developed, to speed your production, improve quality, and conserve finishing materials. Paasche engineers are at your service.

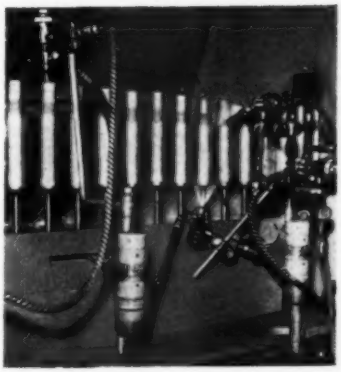
Further information about Paasche automatic equipment is included in Bulletin F3-42. Write for your copy and complete information.

★

Airbrushes, Automatic Airpainting Equipment, Booths, Pressure Regulators, Air Conditioners for Compressed Airlines, Airguns and Stripers

★

Paasche Airbrush Co.



Paasche spray gun at left coats inside of shell case. Three guns at right coat outside. Guns follow piece while spraying.

1. Slanting fluid inlet and shorter fluid passage simplify cleaning. Swivels to any position in 360°.
2. Micrometer Calibrated Spray Pattern Control.
3. All working parts enclosed in strong machined brass body . . . protected against damage. Gun weighs only 22 ounces.
4. Conveniently located fluid control.
5. Easy grip handle, molded to fit the hand.

1917 DIVERSEY PARKWAY, CHICAGO, ILL.

Questions; Answers

Questions are welcome and will be answered promptly by mail. Readers are invited to prepare and send in additional information relating to any of these questions and answers.

Will Infra-Red Bake White?

We are interested in the application of infra-red drying, as applied to household refrigerators and would like to know if you could give us any information on this, or could you refer us to anyone who could give us information?

We are told that infra-red drying is not as satisfactory on white as on the darker colors. Is this correct, and if so, do you think that such an installation for refrigerator cabinets would be satisfactory?

Any information you are able to give us will be very much appreciated. Also, any reprints from INDUSTRIAL FINISHING that might contain useful information.—N. R. C., Masterton, N. Z.

N. R. C.'s letter is being referred to our International Co. for reply. . . . I might say that infra-red or radiant heat can be used satisfactorily as a drying agent where white finishes are used, as in the case of refrigerator cabinets. However, radiant heat is reflected in somewhat the same manner as visible light, that is, the lighter the color of a surface being heated or dried, the greater the amount of energy reflected. This being true, it would require a greater amount of energy to dry a white refrigerator cabinet than one of a darker color. This, of course, is explained by the fact that the greater the amount of energy reflected, the less the amount absorbed by the material being heated. In some cases 50% or more energy may be required for heating a white, as compared with a black surface.

As to whether or not radiant heat is economical for the purpose to which N. R. C. refers, naturally this depends upon the local cost of electricity as compared with gas, steam, etc. I hope this satisfactorily answers your inquiry . . . — *J. D. H., Commercial Eng. Dept., Westinghouse Electric & Mfg. Co.*

Glass or Plastic Discs

We are using a quantity of ¼x 16-in. glass discs with beveled edge and ⅛-in. hole through the center. Due to the enormous breakage, we would appreciate your forwarding to us any available information relative to the manufacturing of a transparent plastic or plexiglass.—A. R. Co.

It is not clear to me whether you wish to manufacture or to purchase the transparent plastic. If you desired to buy plastic pieces to replace the glass, you might contact some molder of plastics like the Boonton Moulding Co., Boonton, N. J.

If you intend to mold the parts in your own establishment, a list of raw material suppliers for transparent plastics can be found in the plastic section of Thomas' Register of American Manufacturers.

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Acid Resistant Paints
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PROTECTIVE COATINGS that Meet U. S. Government Specifications

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U. S. Coast Guard
U. S. Maritime Comm.

U. S. Navy
Aeronautics
Marine Corps
Bureau of Ordnance
Bureau of Supplies & Accounts
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A.S.T.M. Spec.

Hilo has the "Know How" to make Government Specification Protective Coatings, to apply them to surfaces of all kinds and to adjust the coatings to factory conditions.

Tell us the Hilo Coatings in which you are interested and we will send samples and complete details for handling.

HILO VARNISH CORPORATION

Established 1863

42-60 Stewart Ave.
BROOKLYN, N. Y.

2420 Washburne Ave.
Chicago, Ill.

Park Square Building
Boston, Mass.

The plexiglass mentioned in your inquiry, and most other plastics, are available only for war and essential civilian use at the present time.

Another possible solution to this problem, if practical under existing conditions, would be to have your supplier of glass discs cover the discs before shipment with a heavy kraft paper. The paper would be attached to the glass with a water-soluble glue. At the proper moment the paper could be washed off with water. The paper covering should afford the glass much protection during shipping and handling.—M. A. GLASER.

The DeVilbiss Co. Awarded Army-Navy "E"

At a colorful, impressive ceremony at the company's plant in Toledo, on January 11, the men and women of The DeVilbiss Co. were awarded the Army-Navy "E" for high achievement in the production of materials for war.

Photographed as the "E" pennant was presented are (center) Lieut. Col. T. H. Eickhoff, Asst. Chief, Cleveland Ordnance District, who made the presentation on behalf of Robert P. Patterson, Under Secretary of War; (left) Allen D. Gutchess, President; (right) Paul Kesler, who received the award, respectively, for the management and employes of the company.

Lieut. Col. Eickhoff, in presenting the award, said that it had been earned, not so much for the production of guns, tanks or bullets but for the company having so well accomplished the difficult job of adapting its peacetime products to the job of war.

Aircraft Developments

The tense aircraft design and production war is bringing out more new tools and machine processes than any other line of weapon manufacture. "Manufacturers should be on the lookout," says Charles H. Standish, President of Designers for Industry, Inc., of Cleveland, Ohio, "to find applications to their products of these new developments." Mr. Standish's company has specialized in the designing and building of complete tooling for aircraft and he has been in a position to observe these possibilities.

"Take for instance the assembling process developed by Bell Aircraft Corp.," continued Mr. Standish. "Thin retainer strips are pressed into extrusions in the rib structures to hold the fabric so no stitching is required, and so there is no danger of tearing. Time studies show a saving of approximately 75% in time required for stitching, and a 50% saving over the method which employs sheet-metal screws."

Certainly there are many products where fabric has to be attached to metal or wood, where these principles would be worthwhile. And other devices and processes specifically developed for wartime expediency offer similar possible applications to postwar products. Mr. Standish says that his organization has arranged with Bell Aircraft Corp. and other companies to find applications for these new developments and to license prospective users.

Pittsburgh Plate Glass Co. Advances L. F. Theurer

Mr. E. D. Griffin, vice president, Pittsburgh Plate Glass Co., announces that Mr. Louis F. Theurer, industrial sales manager, Milwaukee Paint Division, has been appointed West Coast Divisional Director, succeeding Mr. Floyd S. Green, who is retiring. Mr. Theurer begins his new duties March 1. Mr. R. I. Ogle, industrial paint sales representative in the Chicago territory, will be industrial sales manager at Milwaukee.

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GLIDERS
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CARGO SHIPS
COMBAT SHIPS

These systems provide the utmost in moisture resistance and durability. Proven by seven years of use. Meet Government requirements. Approved as systems. Speed production because they dry fast. Ask for specifications.

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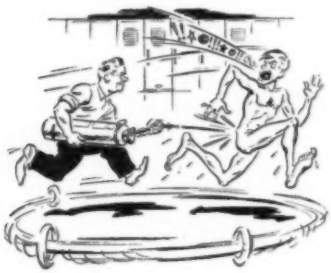
PLYWOOD FINISHES

INDUSTRIAL RESEARCH DIV. OF WIPE-ON CORP., 105 HUDSON ST., NEW YORK

Frolics in the Finishing Room—13

NEXT to our main building we have a locker room where the employes may wash up and change clothes after work. This room is equipped with a fire extinguisher which is hung in a prominent place near the door.

One day one of the workmen, eager to get away a little early, was caught in the act of changing



clothes before the whistle sounded for quitting time. He had just removed all of his working clothes down to the skin, when a fellow workman walked into the locker room.

The intruder, a mischievous individual, promptly seized this opportune moment for some fun. He grabbed the fire extinguisher, upended it quickly and gave chase to his naked co-worker. The room was small and the floor was slippery, so they both were soaked before they had circled it many times.

Suddenly another man opened the door to enter the room. It was the shop supervisor. But the pursuer, caught red-handed with the extinguisher in his hand, was a quick thinker. He promptly exclaimed in a most convincing manner, "This darned thing fell off of the hook again, boss!" Nevertheless, a bulletin appeared next day concerning "too much horse-play" in the shop.—AL. MATLOCK.

Prolonging Life of Material Hose

TAKING care of rubber hose, so as to prolong its life, is a timely subject, as the rubber situation is critical. There is a serious shortage of natural rubber and synthetic rubber hose.

In regard to the different solvents to be used for cleaning different types of materials from hose: For cleaning oil stain, filler, varnish and oil enamel from the hose, I generally use white gasoline or naphtha first. I use it on both the inside and outside of the hose. This cleaning should be followed by using alcohol or lacquer thinner to remove what gasoline or naphtha is left in the hose, because gasoline and naphtha contain a percentage of oil which attacks the rubber, causing it to become soft and to deteriorate prematurely.

For cleaning lacquer sealers and lacquers from hose, it is best to use a cheap grade of lacquer thinner. Lacquer thinners are so scarce and expensive at the present time that some concerns are straining their used cleaning thinner through a fine filter so they can use it over again.

For cleaning shellac and shellac toners from the spray hose, use denatured alcohol.

Of course, all materials possible should be drained or forced by air from the hose before it is cleaned, as this saves a loss of the finishing material itself, as well as saving the hose. All material hose should

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Has all the desirable qualities of Shellac.

Has extremely high resistance to water — Thins with alcohol — Dries fast and hard — Good adhesion — Sands easily.

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Established 1917

I. C. D. FORMULA NINE

NON-INFLAMMABLE « wax free REMOVER »

for paint, varnish, lacquer, baked enamel, adhesives

EASY TO APPLY—NO AFTER-CLEANING

ORDER TRIAL GALLON AT DRUM PRICE

I. C. D. FORMULA 9 is the standard of safety and quality . . can be sprayed or brushed . . doesn't raise grain nor discolor . . quickly removes all kinds of finishes and coatings . . costs less to use . . saves time, labor and material.

SPECIALTY COATINGS—I. C. D. Labs. have specialized in the formulation and manufacture of non-inflammable coatings and substitute finishes. If you have a tough coating or finishing problem send in your specifications, finishing schedule and requirements. Immediate action and a prompt reply promised.

INDUSTRIAL CHEMICAL DEVELOPMENT CORP.

331 MADISON AVE. NEW YORK, N. Y.

be cleaned at the end of each day's work, as this prevents the material from drying and getting hard or corroding inside and outside of the rubber hose.

As to the average life of the material hose, this all depends on, 1) how the hose is handled, 2) the quality of synthetic rubber in the hose and, 3) the type of materials used for spraying. A good grade of hose, carefully used, will last as long as two years, where varnish, lacquer and shellac are sprayed. However, since the solvents used in filler and oil stain contain oil, these materials will soften the rubber both inside and outside the hose, thereby shortening its life.

Most concerns use synthetic rubber hose, and this is much better where oil stains and fillers are sprayed. The synthetic hose is more oil-proof than ordinary natural rubber hose. However, synthetic rubber hose is scarce now, since the Government is using most of the synthetic rubber available on various war products.

The life of rubber and synthetic rubber hose can be lengthened by wrapping those parts of the hose that come in contact with other hose or that are rubbed against other objects while in service—wrapping the outside with a cloth or tire tape.

Where it is necessary to have a long hose (such as for air dusters used for cleaning loose surface dust from parts or products on a moving conveyor, etc.), this hose is often allowed to lie exposed on the floor and a great many times it gets under the feet of workmen. This can be eliminated by using an ordinary sash-cord pulley and rope with a weight fastened to the end of the hose and arranging this to keep the hose pulled up from the floor and swung out of the way when not in service.

Perhaps there are several other ways or methods that can be used to prolong the life of rubber and synthetic rubber hose. Let's hear from other readers.—H. W. CHESTER.

In addition to the foregoing sug-

Shells for 500-lb. bombs being dry-cleaned on two blast-cleaning machines. Photo., courtesy of American Foundry Equipment Co.

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gestions I think that a hose cleaner furnished by one of the leading spray equipment companies would be a good investment, not only to prolong the life of the hose but also to save solvents and labor.

Hose should never be submerged in solvents of any kind, because the outside coating is not made of the same material as the inside tube which carries the paint.

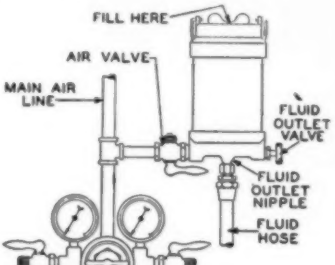
With thinners, solvents and diluents on the critical materials list, they should be conserved. If a hose is used, a 25-ft. length of fluid hose can be cleaned with as little as one pint of cleaning material. From the labor end the hose cleaner will take less time than any other method I know of.

Concentrated thinner solvents and diluents are harmful to rubber and synthetic rubber hose. These materials, mixed with the paint, are much less damaging to the inner tube but they are very bad for the outside coating. The outside of the hose should be cleaned with a saturated rag to clean and soften the paint and should be immediately wiped dry with a dry cloth.

Referring to the accompanying drawing of a hose cleaner (copied from a spray equipment manufacturer's bulletin) this cleaner can be connected to the main air line by hose or pipe. When using the hose method of connecting, connect one end of air hose to the air valve of cleaner and the other end to either valve on right side of the air transformer or to an air cock placed in the main line above the air transformer.

Always install the cleaner in upright position as shown.

To clean the hose, fill the hose cleaner with solvent suitable for the material used and replace the top cap securely. After removing



Arrangement of fluid hose cleaner set up ready for service (at left).

the pressure-feed tank lid or lowering your gravity container, disconnect the fluid hose from spray gun and connect it to fluid outlet nipple of this cleaner. Slowly open the air valve, using air to force paint from hose back into insert container or tank. Close valve and remove excess material from container. Reopen valve. Then open fluid outlet valve from one to two turns. When hose is clean, close fluid outlet valve but allow the air valve to remain open until air has evaporated solvent from hose.—GEORGE MONTGOMERY.

Dulux Mill Whites

In order to conserve essential war materials, Du Pont chemists have developed two new mill whites to be known as War Emergency "Dulux" Mill White Gloss and War Emergency "Dulux" High Hiding Mill White Gloss. The new products, the manufacturer announces, have been exhaustively tested and are offered to industrial users with full assurance of satisfaction on interior walls and ceilings. Both new finishes possess excellent hiding power or opacity.

PROMPT DELIVERY...

To War Industries!

GKS BAKING AND DRYING OVENS

GKS has geared up delivery of baking ovens to wartime speed! Standardized construction from basic units makes it possible for you to have the oven you want operating in your plant . . . in record time! Find out, in your own finishing department, how amazingly fast GKS ovens will turn out perfectly baked finishes.

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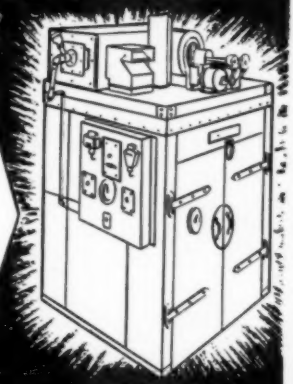

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A combination dipping-whirling machine for completely coating large quantities of small parts with lacquer, enamel, paint, oil, wax, etc. • All operations are within the machine. Parts are dipped into coating material, raised and whirled. Time—as little as 30 seconds. Speeds up production—cuts finishing costs—saves up to 90% of coating materials.

WRITE FOR FURTHER DETAILS OR SEND SAMPLES TO BE COATED.

RONCI MACHINE CO.
45 River Ave., Providence, R. I.

Letters from I. F. Readers

(Continued from page 8)

on army raincoats. Write their Technical Dir., Mr. J. T. Haas.

Stanley Chemical Co. of East Berlin, Conn., makes Haydenite, which is used on Army raincoats. Might be well to ask them whether they have a combination fireproofing and waterproofing material. I understand Haydenite is somewhat fireproof or slow-burning. Hoping this data may be helpful. . . .—Chas. O. Snyder.

Hand Cream Wanted

Your New York office suggests that I write you for the name of the concern from whom I may obtain the hand cream which you wrote up in your November, 1942 issue, on page 98. May I please have this information as soon as possible?—T. Furn. Co.

Information given.—ED.

Dipping Machine Wanted

I would appreciate some information on where I might get an up-to-date dipping machine, suitable for dipping small plastic turnings. The machine should be suitable for other types of work, and produce about 30,000 pieces a day (3-coat job). I will greatly appreciate any information you may give me.—J. Z.

In our reply to this inquiry we named two manufacturers of dipping machines (Smith and Apex). Can any reader suggest another?—ED.

"Protecktol" Wanted

Page 31 of the January issue of INDUSTRIAL FINISHING makes reference to a product known as "Protecktol." We will appreciate your supplying us with the name of the manufacturer of the aforementioned product.—L. A. Co. (Aircraft).

It's Ault & Wiborg Corp., Cincinnati, Ohio, and New York, N. Y.—ED.

Bottle-Cap Black

Referring to the October number, or that part on bottle caps, by Francis A. Westbrook, will you please give us the name of the company who makes permanent black, and their address? Also,

the address of the Ronci Machine Co. and other manufacturers' names and addresses who make machines and paints for bottle caps?—E. S. Co.

Information given by letter.—ED.

Fume-Proof Paints

During the past year we have conducted a rather extensive research on fume-proof materials for use in inside painting, under various specific fume conditions, and have prepared a folder descriptive of this work. Included in this folder is a chart which shows resistance of our various materials to specific fumes.—Keeler & Long, Inc.

Tumbling Information

Would it be possible for you to send us a copy of the September and October issues of INDUSTRIAL FINISHING, both containing the article on "Tumble Finishing"? Reference is made in the December issue of the article, but we are unable to locate our September and October issues any place.

Any information you can give us on the names of manufacturers of tumbling equipment will also be appreciated.—K. Wood Carving Co.

We manufacture and finish wooden products such as buttons, ornaments and various commercial novelties. These products are finished and lacquered by tumbling.

We know all about color mixing but we have no experience in tumbling. Kindly give us, as soon as possible, the name of a book written on the subject of tumble lacquer finishing, if there is one.—O. Co.

We are coating wood dowels for the Signal Corps, with a shellac substitute. Can you give us any information on coating by a tumbling process? What other methods would you suggest which would be the best and cheapest?—C. M.

Another method of coating small parts is sometimes called "whirling," that is placing them in a mesh basket, submerging same as in dipping, lifting basket clear of paint and whirling or rotating it rapidly to throw off the excess paint. Information about both methods is being sent to you by letter. —ED.

Colored Wax Finishes

We would like to get in touch with manufacturers of finishing materials who are prepared to furnish bright-colored wax finishes, such as are used on wood toys. The finish would have

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Specifications + PLUS!

Adaptation of formulae to the individual requirements of busy war contractors.

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Within specification limits there are many possibilities of improvement in speed, workability, and freedom from rejects.

This PLUS factor is worth considering. We'd like to tell you more about it.

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GLOSS SYNTHETIC PROCESS COLORS

With decorative metals curtailed for the duration, excellent results are being obtained by silk screen process on plastics, wood, glass, leather and other non-critical materials, using Ronan Gloss Synthetic Process Colors. These colors provide excellent adhesion, produce brilliant, high-gloss effects and hold fine, sharp details. Resist weather, sun, chemicals, fumes, etc. Many attractive colors for immediate shipment.

A TYPICAL CASE

Switching from metal to plastics nameplates, two leading radio manufacturers found the answer in silk screening with Ronan Gloss Process Colors.

Write for full details.

RONAN

T. J. Ronan Co., Inc.

749 E. 135th St., New York City

Paints — Varnishes — Lacquers

to be suitable for use on white pine, poplar or basswood. Application could be made with a spray, but we prefer tumbling.

We would like complete information on such finishes. If you are in a position to place us in touch with manufacturers of these materials we will appreciate it.—W. R. Co. (School Specialties).

Information given.—ED.

Coated Fiber Board

We are interested in learning the location of The Traco Division of M. A. Ferst, Ltd. We are interested in securing information on pyroxylin-coated fiber board. This lead has been secured from your publication INDUSTRIAL FINISHING, December issue.—X. Venetian Blind Co.

The company is located in Atlanta, Georgia.—ED.

Striping Tool Wanted

In your Dec. 1942 issue of INDUSTRIAL FINISHING, we note that there is a striping tool mentioned on page 66. We would appreciate your giving us the name and address of the manufacturer of this tool.—U. V. Co. (Wall-tile Products).

It is Beugler Mfg. Co., 4318 W. 2nd St., Los Angeles, Calif.—ED.

Cleaning Spray Booths

In your June 1942 issue of INDUSTRIAL FINISHING, you have an article on page 23 about an easy method of cleaning spray booths. You state that you will furnish the name of the compound that is used and the company that you can buy it from. Will you please send me this information as soon as possible?—C. Furn. Co.

Request granted.—ED.

Dipped Work; Parkerizing

In your September issue we note that you mention a process for removing the beads from dipped work, the equipment being manufactured by Harold Ransburg Co., Indianapolis, Ind.

We would appreciate it if you could forward us reprints of the article in the December 1940 issue covering this process. Also, could you ask the Harold Ransburg Co. to get in touch with us and give us full details?

We are also interested in Parkerizing and Bonderizing for use in connection with the manufacture of refrig-

Capt. Joe Foss Ties Rickenbacker Mark

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MARINE PARTITIONS
RADIO INDUSTRY, ETC.
SKIS

CAPT. Joe Foss, U. S. Marine Corps Flyer from Sioux Falls, S. D., last month equalled the old record held by world-famous Capt. Eddie Rickenbacker. He has chalked up twenty-six Jap planes over the Solomons as leader of the "Flying Circus", a squadron of hard hitting Marine flyers who have run up a high score with their Grumman Wildcats.

The men from Grumman and from every plant who contributed to the construction and production of the Wildcat are proud of our flyers and equally proud of the equipment they are making for them.

Our production facilities are devoted to the manufacture of government specification protective coatings. Listed here are just a few of the war products now being coated with our materials.

Phone, wire or write and let one of our finishing experts help you "keep production rolling."

THE LAWRENCE-McFADDEN CO.

Headquarters for Fine Finishes Since 1875

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erator cabinets, and we would appreciate it if you would ask Parker Rust-Proof Co. to get in touch with us and give us full details of their products and processes.—N. R. C. (Masterton, New Zealand).

Removable Stickers

In your November issue, I saw an article on page 97 headed, "Removable Stickers." The article says that the adhesive on these stickers does not show when the sticker is removed. Please advise where I may get some of this kind of adhesive. I am thinking of using it on masking paper to put on windows to prevent paint from getting on the glass when we are painting a house.—F. B. (Spray Painting).

Write Avery Adhesives, 451 E. 3rd St., Los Angeles, Calif.—ED.

Removing Burrs

In your November issue of INDUSTRIAL FINISHING, we noticed an article on page 98 regarding the removal of burrs. We are particularly interested in equipment or a method of removing burrs from parts which have had hexagon heads milled on them. We would appreciate it if you would be good enough to advise whom we should contact regarding the above matter.—L. Co.

Coating Job Offered

One of our subscribers—likewise a prospective advertiser—wants to locate a concern that can coat a wood form with abrasives.

The Carborundum Co. worked out the following formula: "Paint the form with glue solution, 30 parts of glue to 70 parts of water. Coat with No. 80 grit garnet, which will take up an even coat and throw off the balance. Let stand for a few minutes until glue jells and then size with a glue solution of 15 parts of glue and 85 parts of water."

Can you suggest the names of any concerns, preferably in the East, who might be able to do such work? The volume ought to run attractively large. —"Premium Practice."

We have given this N. Y. inquirer the names and addresses of some commercial finishers in the East.—ED.

Degreasing Equipment Catalog

A 24-page, two-color catalog on Detrex Solvent Degreasing Equipment is announced by the Detroit Rex Products Co., 13005 Hillview Ave., Detroit, Mich. First hand information is presented, in an interesting and easily understood style, on all phases of this rapid metal-cleaning method. The catalog contains numerous illustrations of various types of degreasers, and data on solvents. Detrex degreasers of vapor, immersion, spray, and vapor-spray-vapor types are featured. Interesting adaptations of various kinds of conveyors installed in Detrex degreasers are described in detail. One portion of the book presents degreasers of special design and construction for cleaning in armament production, as well as Detrex processing and shot-testing equipment. Detrex alkali, emulsion, and spirits washers, and Triad alkali cleaning and stripping compounds are also covered.

Industrial Oven Bulletin

Oven constructions, methods of heating, illustrations of industrial paint drying ovens of various types including conveyorized ovens, and diagrams of material-handling layouts through ovens are shown and explained in a 20-page catalog bound in blue and white covers and printed inside in black and blue. This is bulletin No. 130. For a free copy, write the manufacturer, J. O. Ross Engineering Corp., 350 Madison Ave., New York, N. Y.

Metal Cleaning Bulletin

An 8-page bulletin reveals important practical information about several of the "Mercury" cleaners developed for cleaning parts and products made of various essential metals, and doing the job quickly, thoroughly and economically. Copies of this informative bulletin should be in the files of every metal-finishing foreman or supervisor in both war and civilian industries. A copy can be obtained from Mercury Chemical Co., Inc., 2706 David Stott Bldg., Detroit, Mich.

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New Books

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Book of Insulating Varnishes Is Free

The P. D. George Co., St. Louis, Mo., manufacturers of Pedigree insulating varnishes and compounds, announces the publication of a new insulating varnish catalog. This extensively illustrated 36-page varnish guide contains data on over 40 different materials, each graphically described in easy-to-read charts.

Along with the essential technical information offered, are striking illustrations of production and laboratory operations. Page size is 8¼ x 10¾-in. Binding is in textured maroon-colored heavy paper, lettered in yellow and black.

Brilliantly Entertaining
(Industrial Tape Catalog)

Many interesting illustrations that show timely and useful applications of tape in both war and civilian service (tape for masking, stenciling, identification, sealing and protection) are revealed in a new loose-leaf, plastic-ring-bound catalog printed in red and black. Pages are 8½ x 11½-in. It shows that tapes of different colors, including transparent, different textures, thicknesses, widths and strengths are available. The title, meaningless to some but full of meaning to others in the know, is "Utapia."

Here is a catalog that will entertain you and your friends with its picturesque dramatizations of the use of tape in various ways today. Copies are free. Write the Industrial Tape Corp., New Brunswick, N. J.

Bulletins on Infra-Red Electric Drying

Bulletins containing essential information and interesting illustrations that help to simplify what you need to know about today's facilities for infra-red electric drying of paint coatings, have been published by North American Electric Lamp Co., 1014 Tyler St., St. Louis, Mo.

The merits of this method of quick paint drying, along with numerous illustrations of standard and special installations of the equipment, are included in what's offered free for your industrial equipment library.

Factory Truck Catalog

An attractive loose-leaf catalog illustrates and describes a variety of factory trucks manufactured by Rose Mfg. Co., 12400 Strathmoor, Detroit, Mich. The 8½x11-in. pages are printed in black and yellow and are bound in an excellent binder which has heavy yellow covers printed in brown. Steel casters for special trucks are also listed.

Painters' Supplies Catalog

Finishers and industrial painters will find items of interest in the new 72-page catalog of the Red Devil line. It is "Catalog No. 18" and is identified by its brilliant red cover. Glass cutters, scrapers, paint conditioners and numerous other specialties are illustrated and described. Write to Landon P. Smith, Inc., Irvington, N. J., for a copy.

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Distributed monthly to finishing room and paint shop foremen, production superintendents and company officials of metalworking, woodworking and miscellaneous industrial plants where production finishing is a major operation in parts and products manufacture.

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Editorial

Looking Ahead; New Finishes

* It is interesting to contemplate the many new finishing materials that will be available when this war is over. Along with the new materials there will probably come new methods of application and drying.

With the multitude of new paints made primarily for war use, and the tremendous amount of research and development that these "war paints" require, the finishing materials manufacturer is learning to use many new and useful tools.

In the case of non-priority finishes, it can be truly said that the paint manufacturer has indeed been able to make so much from so little in the way of available raw materials.

When the Axis has been disposed of, with the proper ceremonies, and when our manufacturers of civilian goods go back to American peacetime production, it would be wise for them to pause and consider their finishing problems Finishing, together with most other things, is a changing art. If the forward-looking finishing executive looks into this matter. here are a few things he will find:

In finishing materials—a greater variety than ever before. Finishes of the future, in their resistance to weather, sunlight and other destructive factors, will make many pre-war finishes look like "weak sisters." Baking finishes will bake faster and harder. Air-drying finishes will dry to pack in perhaps two to four hours—and they will have properties similar to those that baked finishes have. Many articles previously finished with two or more coats will be finished instead with one coat of the new mono-bake material that was com-

* Guest Editorial . . . Many readers can write an excellent editorial — two or three paragraphs that present a timely suggestion or valuable idea which will stimulate real thought on a live subject. The Editor welcomes guest editorials and pays for those that are published.

ing into vogue before Pearl Harbor. There will be more color in paint than ever before—brilliant reds, blues and greens.

The alert finisher should contemplate the use of more automatic spraying in the days to come. Mr. Harold Ransburg's tear-drop eliminator will make dipping a practical and economical method of application for parts that have heretofore required spraying. Tumbling and whirling (as a means of paint application) should also be more prominent than ever before.

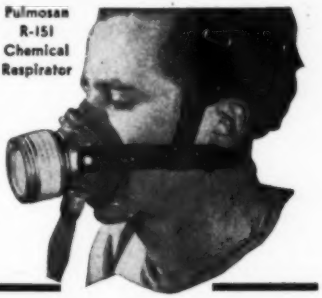
With new developments in electric power needed for the war effort, we may look forward to cheap electric power available after the war. This will lead to the use of more electrically-heated ovens, heating by infra-red rays, and even heating by high-frequency current. And new developments in heating by gas and oil may be expected to keep pace with advances in electric heating.

So, in conclusion, we may say that the era after the close of the war will usher in a great and interesting period of finishing—better, brighter coatings, applied by newer, more efficient methods. and dried faster and more economically. And, with all of these important improvements, the products-finisher should be able to do his job as he always has done it—to give the public the best possible job for the least money.—M. A. GLASER.

War's Effect on Finishing

* The painting of planes, tanks, army cars and trucks, guns, shells and all their component parts, along with all the other tens of thousands of war products, has demanded the utmost in ingenuity

Pulmosan R-151 Chemical Respirator



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from America's finishing foremen, supervisors and engineers. Production equipment and methods employed by almost every industrial plant in the U. S. A. had to be either partially or completely redesigned to cope with the problem satisfactorily.

Hours of work in almost all plants had to be doubled and trebled in order to speed up war production. Labor turnover, coupled with this increase in productive man hours of work, has demanded better supervision. Men have risen from the ranks, good men whose qualifications for a supervisory job might otherwise have been questioned, to help with this vast training and production program.

Induction of women in factories has helped to bring about many desirable results; for example better working conditions. Specifically, we now have cleaner factories, better rest rooms and more of them, more rest periods which are vital to high production, and more use of music in factories.

The employment of women has resulted in the development of new technique in many operations; for example, revamping jobs to permit horizontal movement of parts rather than vertical, to lessen the fatigue factors involved.

The war has effected a closer cooperation between those manufacturers who supply and those who use finishing materials. Each month has seen more and more solvents, diluents, resins, plasticizers and other finishing material ingredients put on the WPB's critical list. Most of our materials were reformulated time after time last year. This required constant checking, plus many changes in methods. The net result has been a closer bond between our supplier and ourselves. We have had to lean upon our suppliers and they have depended upon our cooperation time after time—far more than ever in the past.

I believe that the problems created and their disposition will revolutionize finishing materials, equip-

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ment and methods. I foresee, for example, a quick-drying air-dry enamel comparable to lacquer. . . . It is only one of many factors that will help speed up production for the post-war reconstruction era.—K. M. S.

Fire Hazards in the Finishing Room

★ Since the beginning of World War II, America has been constantly on guard against Fifth Columnists. The average foreman finisher of today, along with every man in his department, has to be constantly on guard against very definite Fifth Columnists who are in most finishing rooms.

These Fifth Columnists are fire hazards. There is always the possibility that they will destroy the factory, which would mean the elimination of the foreman's job as well as hundreds of other men's jobs. And that isn't the worst of it. Most of the factories are engaged in war production, and every factory destroyed means hampered production and possibly a prolonging of the war.

Fire hazards in the finishing room have greatly increased since the war began. There are several reasons for this. Many factories have greatly increased their production; they are making war products which are new to them; and most of them are working two and three shifts when they formerly worked only one shift. More material is being sprayed, therefore spray booths become heavily coated with waste material more quickly; more wiping rags, sandpaper, etc., are being used, which means more waste materials are being discarded.

In some factories there is not

for WAR work . . .

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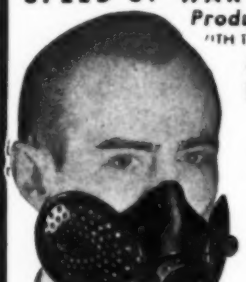

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Industrial Finishing, Indianapolis, Ind.

sufficient time between shifts to clean spray booths. This is especially true where conveyor systems are in operation; booths cannot be cleaned while the conveyor is moving. Most of the paints used in war production are much more likely to cause fires from spontaneous combustion. This is due to the fact that most of these paints are oil-type materials and they contain a high percentage of pigments. If these paints are allowed to accumulate on spray booth walls, flues, floors, etc., they will catch on fire easily and quickly.

In some factories you will see them spray lacquers on one shift or one day, and then change to oil paints the next day, or vice versa. This also causes spontaneous combustion and if the accumulated waste catches on fire it is liable to cause an explosion. Lacquer dust is very explosive, as any foreman finisher knows.

There are many more fire hazards which must be guarded against, such as open buckets of gasoline, naphtha and thinners of various kinds. Also, dirty rags, worn sandpaper on the floor, and dirty floors are definite fire hazards. Open electric switches, electric wiring not covered with metal conduit, are other fire hazards in the finishing room.

To guard against these fire hazards the foreman finisher should have his spray booths cleaned every day. They should be coated inside with some non-inflammable material after each cleaning. Each sprinkler head in every booth should be covered with a thin paper bag every time after the spray booth is cleaned.

All dirty rags, sandpaper, etc., should be kept in metal containers equipped with covers. This trash should be removed and disposed of

at the end of each shift. All electric lights should have vapor-proof glass covers. All electric switches in the finishing room should be of the closed explosion-proof type. All electric wiring should be enclosed in metal or some fire protective covering.

Employes of finishing rooms should not be allowed to carry matches in their pockets. Every finishing room should have a fireproof dressing room for the employes and they should be compelled to leave their dirty clothes in this room at the end of their working shift.

Above all, every finishing room should be equipped with an adequate number of the proper type of fire extinguishers. These extinguishers should be kept in good condition and every employe should be taught how to use them. Some factories have a fire-drill each week and the employes are taught just what to do in case of a fire. This is a good idea, but *the most important thing to do is to try to remove the fire hazards. Then we are not likely to have any fires.* We can contribute much toward the war effort—and hence to an early American victory—by stopping the finishing room's worst "Fifth Columnist"—fire.—H. W. CHESTER.

Why War Factories Need Effective Color Inside

★ Paint has long contributed to the more "abundant life" of Mr. and Mrs. America. In peacetime it served as a protector of surfaces and as a decorative and hygenic aid to better living.

Today we find paint in the important role as protector of our mechanized army. Planes, tanks, trucks, guns and ships would have a very short useful life indeed if their surfaces were exposed to the ravages of the elemnts without the benefit of protective paint coatings.

While we are well aware that this is a mechanical war, let us keep in mind too that it is also a psychological war—a war of nerves—waged by ruthless enemies who are bent on using every means to annoy, disrupt and ultimately break down our social, political and industrial structure.

Paint, and the color it imparts, can create pleasant and efficient surroundings for those of us who must remain on the home front, producing what it takes to fight for freedom. Paint can, in a subtle way, help to alleviate much of the tenseness among factory workers, especially among those who are held to close tolerances on complicated machines, hour after hour,

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4316 W. 2nd St. Los Angeles, Calif.

and in some cases seven days a week.

Reports on recent research into the effects of paint on human behavior show that a refreshing application of suitable color to the interiors of war factories has been an important factor toward increased production. Output in one plant was increased 15% due to a complete repainting job—with colors intelligently selected. Colors such as lime green, Parisian grey, and Arizona tan are entirely practical for factory use, and even such tints as pale rose and peach, which are usually associated with homes only, are entirely within the realm of usefulness.

Careful study of the individual plant is, let me caution, necessary for satisfactory results. Anything so vitally important as the interior of an American war plant should not be painted according to someone's passing whim. Type of artificial lighting, exposure of each room, ceiling height, kind of product—all of these and more have a definite bearing on the selection of an effective color and sheen.

Gloss white enameled walls present too much glare in rooms that receive plenty of daylight. To remedy this condition, some of the new soft-sheened wax enamels are recommended. They resist dirt, have high light reflection value, but are without glare. White, with its maximum light reflective power, is still preferable for the darker rooms—those that receive too little natural daylight.

Factory equipment too is coming in for a change of dress. Formerly, it was common practice to paint machines uniformly grey. Appearance and dirt resistance were the only factors considered in color selection. Intricate operations performed on small parts and products suggest that we provide contrasting areas around the working surfaces. In other words, if the part being machined is the usual grey, the machine top and back may well be an ivory or cream color to provide more definite lines of demarcation. The base and all the lower parts exposed to grease and the dirt of traffic should be painted a dark hue. Several plants have reported a substantial decrease in personal injuries, less fatigue and increased production—all as a result of color improvements on their machinery.

We see an expanded demand in the national defense program for the painting of forts, cantonments, hangers and hospitals. The recuperative effects of various colors

on casualities of the war are only partially appreciated. Perhaps in the not too distant future some hospital center will undertake experiments to determine if convalescents would benefit from an auxiliary progressive treatment of color. Let us say, for example, the patient would remain several days in a room painted with colors that produce a sedative effect. Then by easy stages he would eventually be transferred to the more vibrant stimulating colors before his release. Science has barely scratched the surface in regard to color and its relation to health and morale. We can look forward to great developments in this field.

To summarize in a few words, paint and color can serve on all the fronts to help us—physically, mentally and spiritually—if we use it intelligently.—N. H. VOIGT, *Industrial Designer.*

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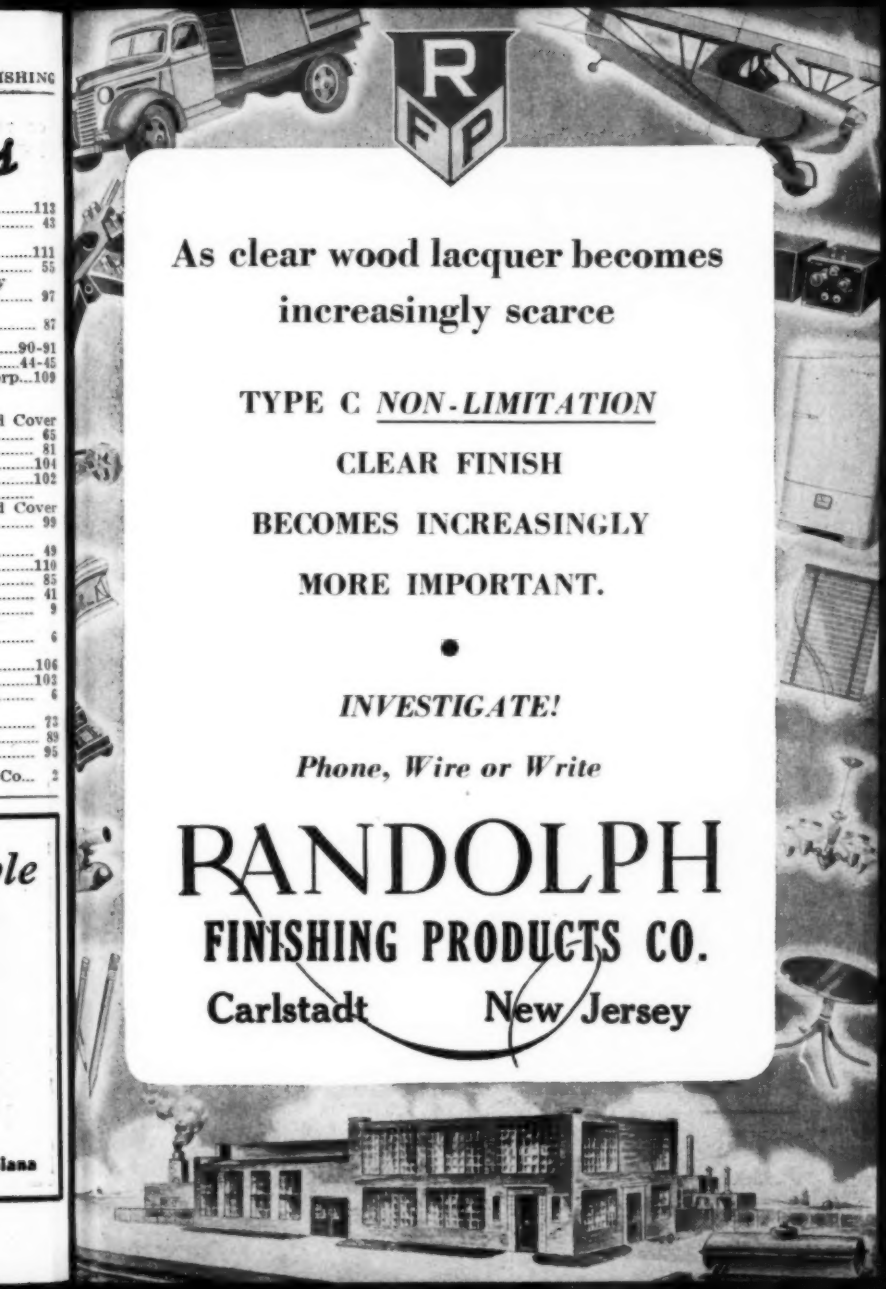
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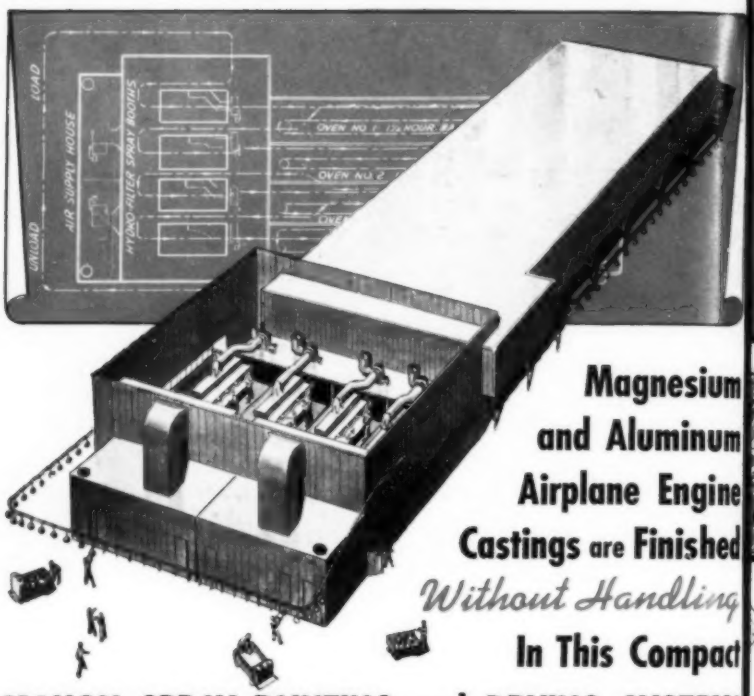

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